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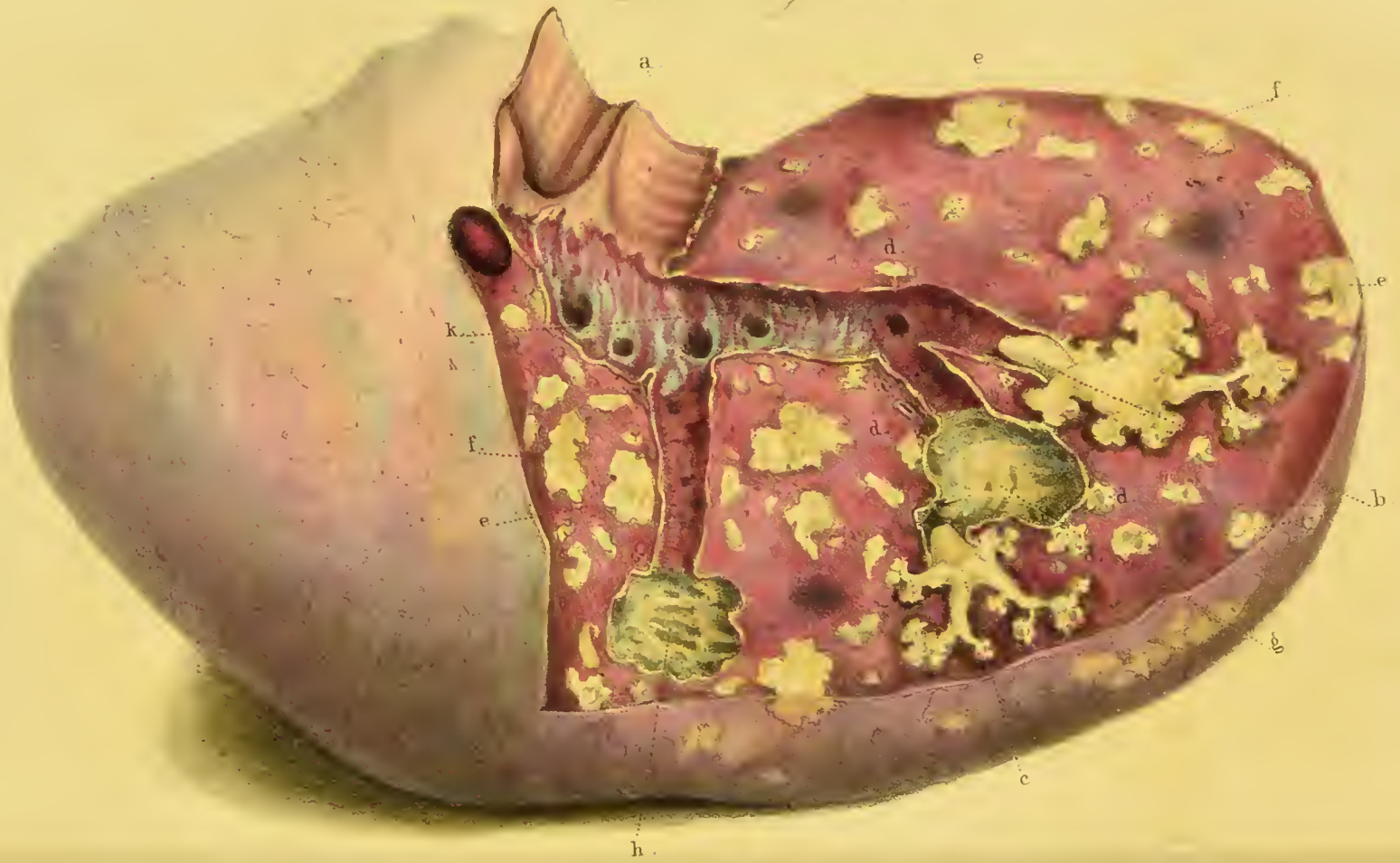

A PRACTICAL TREATISE

ON THE PRINCIPAL

DISEASES OF THE LUNGS,

CONSIDERED ESPECIALLY IN RELATION

TO THE

PARTICULAR TISSUES AFFECTED,

ILLUSTRATING THE

DIFFERENT KINDS OF COUGH.

By G. HUME WEATHERHEAD, M.D.

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DESCRIPTION OF THE PLATE,

SHEWING THE SITUATION AND CHARACTER OF PULMONARY TUBERCLES. COPIED, WITH PERMISSION, FROM DR. CARSWELL'S "PATHOLOGICAL ANATOMY."

THE figure represents a section of the greater part of the superior lobe of the left lung.

a. Left division of the trachea and three large bronchi laid open: one of these bronchi is filled with a mass of tuberculous matter.

b. A portion projecting into the cavity of the tube, and from thence is seen extending into the smaller branches and air-cells, the latter presenting a granular appearance and cauliflower arrangement.

c. This ramiform and cauliflower arrangement of the tuberculous matter still more conspicuous. The walls of the bronchi and air-cells are seen *entire*, and including within them this morbid product, a cylindrical portion of which is seen projecting into a vomica formed in the contiguity of the principal air-tube.

d. d. d. Several very small lateral bronchi, with their air-cells filled with tuberculous matter, and the same substance projecting into the cavities with which they communicate.

e. e. e. Masses of tuberculous matter divided, which present a nearly uniform aspect, resembling the cut surface of firm cheese.

f. f. The same entire, that is, the pulmonary tissue has been removed from around them to shew that they were formed of dilated air-cells filled with tuberculous matter.

g. h. Vomicæ in the bronchi. Both of them contained soft and firm tuberculous matter; their internal mucous surface was pale, and covered with a layer of the same substance.

h. A principal bronchus, which was ulcerated, and here and there in a state of sphacelus. The mucous membrane of the other large bronchial tubes was of a livid red colour.

PREFACE.

The great prevalence of Diseases of the Lungs, and the danger to life which attaches either to their immediate consequences, or ultimate results, have ever obtained for them a large share of anxious attention and study.*

Although the returns from the Bills of Mortality cannot be considered as perfectly correct, yet, among the diseases most familiarly known, and therefore least liable to be inaccurately reported, are those of which we are about to treat. By these re-

* The following is an abstract from the "Weekly Account" of deaths from lung diseases for the month of December 1836.

Diseases.	Week ending			
	6th Dec.	13th Dec.	20th Dec.	27th Dec.
Asthma	45	86	10	10
Consumption	221	333	42	36
Croup	2	53	1	2
Hooping Cough ..	24	70	6	10
Inflammation of the Lungs and Pleura	22	25	5	3
Measles	39	84	3	7

Total for the Month, 1139.

turns, it appears that deaths from diseases of the respiratory organs average above one-fourth of the whole number.

Amongst the causes to which this extensive prevalence may be ascribed are, the changeable character of our climate, the faulty conformation of the chest, hereditary predisposition, &c.; but perhaps no cause contributes more largely to swell the list of mortality than the patient's own neglect; and the ordinary expression, "It is only a cold," is one which is often too slightingly applied to what is shortly to lead to the grave!*

A cough, it is true, is frequently a trivial complaint in its first effects, and with common attention, may be easily got rid of; but we are to recollect that a cough, even of the simplest kind, is apt to lay the foundation of permanent mischief. Dissection every day demonstrates the fact that, whatever may have been the disease which has ultimately proved fatal, or how much soever other organs may have suffered pathological alterations, the lungs are rarely found perfectly sound—an effect solely attributable to some previous inflammatory affection of the part. This fact of itself proves the danger of delaying

* Dr. Woolcombe states the number of persons who annually fall victims to Consumption in England, to amount to fifty-five thousand.

to attend to a cough that evinces any degree of obstinacy in yielding, for the very circumstance of its obstinacy should be taken as a timely warning. In the incipient stage of the complaint, proper means can effect much, whereas, when the disease is firmly rooted, the utmost resources of our art often avail us nothing.

No views in medicine are beginning to obtain more general acceptance among the best informed, and most experienced practitioners of this country, than those relating to the tissues. When attentively studied, it will be seen how closely identical tissues, when diseased, assimilate in their pathological nature, in their morbid physiology or symptoms, in the character of their terminations, and, lastly, in the therapeutic means which experience has proved to be most successful in their cure. It was on this basis, that the Author constructed his "Synopsis of Nosology," in elucidation of the principles of pathology; in his Lectures on Therapeutics, he has found the same views not less illustrative in explaining the operations of medicines on specific tissues; and he has combined both circumstances in treating of the diseases which the following pages embrace.

Independent of the importance to patho-

logy in general of the doctrine of the tissues, first hinted at by Dr. Carmichael Smith, and afterwards more fully developed by Bichât, the researches of men eminent in other departments of medical science, have contributed to a correct knowledge of pulmonary diseases, by confirming that which is deducible from the homogeneity and mutual dependence of tissue, symptom, and therapia. The progress made towards a more accurate acquaintance with the diseases of the chest, derived from the invention of the stethoscope, is now universally admitted. This we owe to Laennec. The seat of tubercles has lately been ably elucidated by the anatomical labours of Dr. Carswell; and that of croup has been not less correctly defined by M. Bretonneau—a writer who, by his recent investigations, has thrown more light on the pathology of this disease, than any that has preceded him. Of the result of these investigations, the Author has freely availed himself, from their not being generally known in this country.

36 *George Street, Hanover Square,*
7th February, 1837.

CONTENTS.

THE

NATURE AND TREATMENT

OF THE PRINCIPAL

DISEASES OF THE LUNGS.

INTRODUCTORY OBSERVATIONS ON THE PHYSIOLOGY AND PATHOLOGY OF RESPIRATION.

The organs of respiration consist of various structures; and these, again, are composed of different tissues: for instance, the structure of the upper part of the windpipe, constituting the organ of voice, is not the same as the lower part, which forms the air tubes; while the structure of the substance of the lungs bears no resemblance to either. Now, inasmuch as the structure and particular function of the different parts entering into the composition of the respiratory organs vary, so also might we naturally expect the particular signs or symptoms which characterise them to differ when they severally become the seat of disease. To point out these distinctly, as well as the best

means of removing them, is the object of the present treatise.

Breathing is a compound action, consisting of inspiration, or the inflation of the lungs by the reception of air into them, from the surrounding atmosphere; and of expiration, or the emptying of the lungs of the air they contain.

The first, or inspiration, is performed by the chest expanding its walls, and thus enlarging its capacity, when the air from without rushes in to fill up the vacuity. Expiration, on the contrary, is produced by the sides of the chest collapsing to their former state; and the compression, occasioned by their fall, expels the air from the lungs.

Natural breathing is performed slowly, and without apparent muscular effort. An adult person respires, on an average, from fifteen to twenty times in a minute; an infant, from thirty to thirty-five.

Breathing is both a voluntary and an involuntary action: we can hurry or suspend it, to a certain extent, at pleasure; but we must consider it chiefly as an involuntary function, for, during sleep, it is performed unconsciously, and the same, for the most part, even when we are awake.

Natural respiration is accomplished by the alternate contraction and relaxation of the muscular fasciculi placed between each rib, and the diaphragm or midrif. In childhood, breathing is principally performed by the first set of muscles—

the intercostals, as they are called; in manhood, both equally concur in the action; and in old age, owing to the loss of flexibility, or complete ossification of the cartilages of the ribs, respiration is almost entirely performed by the diaphragm. It is this last muscle, likewise, which contributes most powerfully while we are awake and up; and the intercostals during sleep. The reason for which is obvious, since, in the recumbent position, the diaphragm cannot so readily descend (which it is obliged to do on contracting), on account of the bowels pressing against it.

Many circumstances modify the frequency of respiration besides a local affection of the organs. The enfeebled and nervous breathe with more frequency than the robust and healthy; passions of the mind, exercise, rest, the qualities of the air we respire, all affect the frequency of respiration.

Without entering upon the use and purposes of respiration as regards life, it cannot have escaped the reader's reflection, that, however essential atmospherical air is to the immediate sustenance of the vital functions, still it is a matter which, in its natural condition, is foreign to the system. In the healthy state of the air passages and cells, this extraneous body, coming in contact with and distending them, excites no irritation; on the contrary, the blood circulating through the lungs has an affinity or appetite for the air, if I may be allowed an expression which is no metaphor; and

the fact in demonstration of this is, that in proportion to the quantity of blood which passes through the lungs, by so much, in their ordinary state, is the frequency of breathing regulated.

When the frequency of breathing does not, or can no longer, keep pace with, and bear proportion to, the volume of blood circulating through the lungs, as happens in running, &c., then the sensation we call breathlessness, and a feeling of engorged fulness, amounting almost to suffocation, comes on.* It is this "want of air," as Laennec expresses it, which is one cause of the laborious breathing that accompanies several of the diseases of the air-passages, where there is much thickening or tumefaction of their lining membrane; for then the blood undergoes slowly, and with difficulty, the vital interchange of elements resulting from the presence of the air, thus causing it to tarry in its course, and the accumulation or engorgement which this gives rise to consequently produces dyspnœa.

Though the distention of the lungs by inspiration, and the contact of the air with their inner surface, cause neither pain nor irritation in any part of their structure in a state of health, it is

* On this account it is that the horse has eight pulmonary veins, while man has but four. As an animal of speed, it was essential that there should be no ready breathlessness, and, therefore, as little pulmonary engorgement as possible; and hence the number of veins to empty the lungs of blood.

oftentimes far otherwise in a state of disease. In the latter case, the air is frequently expelled with convulsive vehemence; and the noise it makes in passing thus through the organ of voice is familiarly called *cough*.

Cough, therefore, is nothing but a convulsive, forcible, and, therefore, noisy, expiration; and hence, whatever irritates the lungs, directly or indirectly, whether that be inflammation, the accumulation of phlegm, or spasm excited by a distant sympathy, throws the expiratory muscles into sudden and violent action; or, in other words, excites *cough*. From respiration being partly a voluntary, as well as an involuntary action, so does cough, in like manner, partake of its twofold nature, and is either irresistible when excited by an irritant, or it may be induced by a simple effort of the will.

The foregoing observations lead us naturally to this inference, that since there are so many various causes of irritation, both external and internal, direct and indirect, capable of exciting cough, or convulsive expiration; so, in an equally great degree, must coughs also differ in their character, and vary in their mode of treatment.

It forms no part of the plan or purpose of this treatise to enter into any anatomical description of the respiratory organs, however essential it may be for the medical practitioner to know their anatomy most intimately. An accurate and intimate acquaintance with the most minute and delicate

structures of the body is absolutely required to understand, not less the laws of morbid action, than those of natural physiology; and on such a basis it is, that the writer has endeavoured to found his Synopsis of Nosology, or Classification of Diseases. If we trace the multiform phenomena, either of health or disease, up to their elemental agents, we shall invariably find them to be placed at the ultimate extremities of every organic structure; and on this governing principle depends the only sure means by which we analytically come to connect symptoms with the disorder, or disorganisation, of organs: *since each tissue*, as I have observed elsewhere, *has not only a mode of diseased action peculiar to itself, but likewise possesses its own particular sensibilities and irritabilities.* Different structures, therefore, are impressed by stimulants of very different and often opposite kinds: a circumstance of the greatest importance in the cure of disease, since it forms the only rational foundation of all therapeutic principles. The fact of the identity of all morbid phenomena depending upon the homogeneity of tissue, not only establishes the respective affinities which so many diseases have with one another, but also illustrates the connexion between a suite of symptoms set up in the same disease. All the leading symptoms of measles, for example, are inflammatory affections of various mucous tissues; and the particular manner in which they

are grouped, forms the specific character of the disease.* But to return to the lungs — if we examine the ultimate tissues that compose the structure of the internal organs of respiration, we shall find them consisting of the mucous, cellular, serous, vascular, cartilaginous, muscular, lymphatic, and nervous, each of which have characters attached to them, when the seat of disease, that widely distinguish them from each other. Now, although among tissues so closely in contact with one another as many of these are, it rarely or never happens that one alone forms the seat of the disease; on the contrary, though beginning but in one, it be apt to involve other, sometimes all the different, tissues of the lungs; — still, I apprehend, we shall be best enabled to trace the propagation of the diseased action from one tissue to another, by making ourselves thoroughly acquainted with the symptoms peculiar to each. With principles so obviously plain and simple for our guide we shall now conclude these introductory remarks, and at once proceed to the exposition of the diseases affecting that tissue, which is the seat of several different affections, usually confounded together in common language under the denomination of "colds:" namely, the affections of the mucous tissue of the respiratory organs.

* Vide the Introductory Remarks to the author's "Synopsis of Nosology."

CHAPTER I.

OF COMMON CATARRH; OR, A "COLD."

The lining membranes of all the passages, whether destined to convey matters out of or into the system, and hence exposed by their functions to the contact of extraneous bodies received from without, or of excrementitious matters extruded from within, are kept constantly lubricated by a fluid called *mucus:* and hence, are termed mucous membranes. To give an idea to the general reader of what mucus means, we may observe, that the natural discharge from the nostrils is mucus; and that which in ordinary language is called phlegm, or the discharge from the lungs, is likewise mucus. Now, both the nostrils and windpipe, down to its most minute sub-divisions in the lungs, are lined with mucous membrane: it is continuous throughout; and, according as particular portions of this membrane form the seat of the morbid action, so does the disease take its name from the part affected. For example, when the mucous membrane of the nostrils

and their cavities become the seat of inflammation, the disease is called Mycteritis, Coryza, or a Cold in the Head; when it attacks the larynx, or that part of the windpipe forming the organ of voice, it is denominated Laryngitis; and when it is seated in the branches into which the windpipe divides, the *bronchi*, the inflammation obtains the name of Bronchitis.

The first symptoms of inflammation of a mucous membrane, are partially exposed to observation in mycteritis.* There is a visibly increased redness of the part, attended with a sense of heat and dryness; the membrane swells, and thus somewhat obstructs the free passage of the air through the nostrils, giving rise to the feeling of stuffing, as it is commonly called, as well as loss of smell: a heavy dull pain is felt about the root of the nose, and when this extends over the lower part of the forehead, it indicates that the inflammation has extended to the lining membrane of the frontal sinuses, when the disease from the pain gets the name of Gravedo. The mucus, now shortly afterwards secreted, is both altered in quality and quantity, and from being bland, viscid, and scanty, merely sufficient to lubricate the nostrils, it becomes acrid, watery, and abundant, frequently excoriating the parts over which it runs. The tumefaction in the nostrils of an infant, in con-

* From μυκτῆρες, *the nostrils.*

sequence of this disease, is sometimes so great, as to prevent it from sucking. After two or three attempts at suction, it gets livid in the face, and quits the breast in coughing. Now, the reason of this is obvious. In sucking, a child is obliged to breathe through the nostrils, which the stoppage within them prevents; and the moment the infant opens its mouth to inspire, on quitting the breast, the milk in the mouth is drawn by the breath into the glottis, and hence the violent coughing which follows.

Coryza is unaccompanied by cough, because the irritation of the inflammatory action does not extend to the lungs; for cough indicates irritation, either seated in some one of the organs of respiration, or conveyed to it by distant sympathy, and is always to be regarded as an instinctive effort of the lungs to expel something which irritates them. The only circumstance in this affection deserving remark, as far as the respiratory organs are concerned, is the frequent *sneezing* with which it is introduced. Now, sneezing, as the reader may know, is nothing else than a sudden spasmodic and full inspiration, speedily followed by a violent spasmodic expiration, during which, notwithstanding that the greater portion of the air passes out by the mouth, yet, some part of it is forcibly propelled through the nostrils; and the sudden blast, if we may so call it, tends to expel any offending matter lodged there. If

the mouth be shut in sneezing, then the whole of the air is forced out by the nostrils. Sneezing, therefore, is, like cough, to be considered as another physiological phenomenon, stationed as a picquet at a vital out-post by a provident Creator, for the protection of life.

Some late writers have considered all inflammatory affections of the mucous membrane of the air passages as identical. In this view we do not concur, and will shortly demonstrate that there are too many well-marked differences between them, dependent on their several organic relations, to admit any thing beyond a general family resemblance.

The first and most prevalent disease characterised by cough, is a common catarrh, an inflammatory disease in its pure form, chiefly confined to the mucous follicles of the lining membrane of the air passages. Catarrh begins with the usual precursory symptoms of fever: the patient feels chilly, wearied, and averse to exercise either of mind or body; an uncomfortable sensation of heat over the whole body follows, accompanied with headach and pains in the limbs; he has no desire for food; the pulse is quickened, and the tongue coated with a white or brown fur; a sensation of tightness, and some difficulty of breathing, are experienced in the chest, attended with a cough, which is more or less frequent and troublesome, according to the greater or less extent of mem-

brane affected. At first, the cough is attended with no expectoration; but as the febrile symptoms abate, phlegm comes to be secreted, and the cough, in consequence, becomes less violent, though, perhaps, not less frequent, in proportion with the copiousness and freedom of the expectoration. In the first instance, the cough proceeds from the state of the membrane: the inflammation which affects the mucous follicles checks the secretion; the lining membrane of the lungs, therefore, becomes drier than natural, and thus the immediate contact of the inspired air with the now morbidly sensitive membrane, produces irritation by its coldness; and a retropulsive effort, or cough, is the instinctive consequence. In the latter stages, on the contrary, the cough proceeds either from the acrid nature of the secreted mucus, or from its superabundance. Either of the two circumstances is sufficient to produce it; for even when the phlegm has lost all its acrid qualities, and becomes bland and copious, it continues to irritate the lungs by its quantity alone, which coughing is excited to expel as it accumulates.

There are two circumstances which often render an accidental cartarrh chronic and habitual. The first is, neglect on the part of the patient; the second, a debilitated state of the mucous follicles in consequence of previous reiterated attacks of the same disorder. Even with a severe catarrh upon him, a patient is enabled to go about after

the febrile symptoms have abated; and, should he have any avocation obliging him to do so, he is apt to neglect the disease in attending to his business. The morbid action thus kept up in the lungs, has no fair chance of subsiding, but the contrary, since continual exposure to the changes of the weather keeps aggravating the complaint; and if, together with this, the patient be of a broken-down or infirm constitution, or of intemperate habits, a catarrh so neglected is almost sure to become chronic or habitual. If we reflect, for a moment, on the circumstances just noted as tending to render a neglected catarrh habitual, we shall find no reason to be surprised at the fact; for it is to be recollected, that diseased action is as liable and as obedient to the law of habit, as any other action in the living system to which a part has been long accustomed: in the next place, no disease can continue for any length of time, without altering, more or less, both the organic structure and function of the part in which it is seated; and, finally, the necessary effect of every active disease is to exhaust, or, at least, impair, the vital powers of the organ affected. Hence, it is the debility of the secreting organs which is the cause of phlegm being so copiously poured out in all cases of chronic catarrh.

The foregoing observations have, by a natural sequence, fully prepared us to understand the

nature of what has been called *Pituitous Catarrh.* This form of the affection is especially characterised, as the name denotes, by the copious watery nature of the phlegm that is expectorated; the quantity of which is sometimes so great, as to amount to a quart in the twenty-four hours. Nevertheless, we are not thereby to regard the difference between common mucous catarrh and pituitous catarrh, in the quantity and nature of the expectoration to be specific, for this is entirely dependent on the difference of constitution of the persons affected; the pituitous being the form the disease assumes in those of a lax, feeble, or exhausted habit of body, in whom the blood is thin and watery, and the general appearance pale and exsanguine. Constitutions of this character are little liable to inflammations; and when they do occur, they have a strong tendency, from the laxity of the secerning system, to terminate in excessive secretions and effusions. Hence it happens that dropsy of the substance of the lungs (*Œdema Pulmonum*) is never so apt to take place as in a leucophlegmatic patient attacked with pituitous catarrh. In such a habit of body, we can at once perceive the reason why the inflammatory symptoms of a catarrh should never run high, and how expectoration not only takes place speedily, but also why it is abundant and watery.

No age is exempt from pituitous catarrh; but from circumstances that are self-evident, we might,

a priori, infer, what is in fact the case, that children, those of broken-down constitutions, and old people, are most subject to it: the frame of a child is necessarily lax, in order to permit the developement of its growth; and that of old people becomes so in the natural course of its dissolution.

As the inflammatory symptoms in acute mucous catarrh abate, the cough, as we have already observed, loosens as the phlegm becomes more abundant, and the expectoration is brought up with less violent coughing; it gets thicker, opaque, and of a yellow or greenish colour, and gradually diminishes in quantity, until it ceases altogether. With this progressive improvement, the cough, as a consequence, corresponds; for, latterly, this symptom is entirely owing to the *sputa* lodged in the lungs, and coughing is but an instinctive effort to expel it.

Such is the ordinary course of acute mucous catarrh occurring in the robust and healthy, when properly attended to from the beginning; but it is often far otherwise with the disease, when it has been long neglected; especially in constitutions hereditarily or radically unsound, or broken down by age, or by former often-repeated attacks of the same, or of some other, debilitating malady. In all such cases the disease is liable to change its character on the cessation of the active stage of the inflammation; the sputa not merely gets thicker, but, by degrees, increases greatly in quantity.

This circumstance is thought little of at first, and excites no alarm; all the while the strength of the patient is insensibly wasting under the abundance of the expectoration; he becomes gradually weaker and weaker, more or less rapidly, in proportion to the feebleness of his frame, until it arrives at that pitch that he is obliged to keep his bed: and now it is that the symptoms of immediate danger ensue, which, if not removed, ultimately terminate in his death. In the general debility of the system the muscles of expiration necessarily participate, and this is aggravated in them, more particularly, by the constant exertion of coughing; the unavoidable consequence of which is, that they cease to be able to expel, by coughing, the phlegm, as it accumulates; the air-cells first become blocked up, then the smaller air-tubes, until the defluxion, at length, collects in such quantity, as to end in internal or pulmonary suffocation. There is a symptom, connected with this subject, generally known as indicative of great danger, and the very common precursor of death; and that is, the "*rattles*," as it is called. Now, the rattles are nothing else than the noise made by the passage of the air through the thick phlegm in the air-tubes, in breathing. The air, from which we draw the "breath of life*," not being able to enter the air-cells, on account of their being choked with

* "Pulmones extrinsecus *spiritum* adducunt."—CICERO.

phlegm, cannot produce that change in the blood, which, in fact, is the sole purpose of its being sent to the lungs, and for which the lungs are constituted essential organs of the vital functions: life becomes extinct, therefore, under such circumstances, as necessarily as from suffocation produced by any other cause. With regard to what is called pituitous catarrh, I have only one remark to make, which the reader may have anticipated, and that is, that in a catarrh originally of this lax and adynamic character, the tendency to a fatal issue is much stronger than in the mucous, and its termination in death more frequently realised.

The same fatal result not unfrequently ensues from the very same cause, in very young infants; nevertheless, there are certain circumstances peculiar to their tender age and constitution, that modify the *rationale* of it. The frame of a child is the more succulent and vascular inversely in proportion to its age, all the secretions are more abundant, and the excretions more liquid. Such being the case, we consequently find, that when an infant is afflicted with catarrh, the expectoration is always copious,—and in this very circumstance originates the danger; for until children have attained a certain age and degree of intelligence, they have not sense enough to spit the phlegm out, even when the cough has brought it into the mouth. But, besides this, there is another circumstance we are to recollect, which is, that the same want of intelli-

gence deprives the lungs of the increased power and assistance, which a forcible effort of the will contributes to those more advanced in life, in aiding them to expectorate the *sputa*. Hence, we perceive why phlegm should accumulate in the lungs of infants affected with catarrh, independent of the greater quantity secreted, and why death in many instances should occur solely from want of intelligence to aid the natural efforts to expectorate it.

Catarrh in children is distinguished from the coming-on of measles by the greater mildness of the febrile symptoms; otherwise, before the appearance of the eruption in the latter, the affection of the mucous membrane of the eyes, nose, and chest, is much the same in both at the beginning.

Some degree of difficulty of breathing attends upon catarrh from its earliest stages, and in its mildest form. This symptom, in the first instance, is proportionate to the tumefaction that takes place in the air-passages in consequence of the inflammation; but as the disease proceeds, the secretion of phlegm necessarily augments the dyspnœa by partially or completely filling the air-cells, as well as the air-tubes, more or less. Now, both of these circumstances operate physiologically in the same way in producing the difficulty of breathing. A thickening of the mucous membrane, whether permanent and organic, or the temporary and casual result of acute inflammation, impedes that change

from going on, which takes place between the atmospherical air and the blood, by which the former is deoxigenated: and the like, it is evident, must ensue, if the air be prevented from entering the air-cells, from their being filled with phlegm. It is this latter circumstance, as was said, which gives rise to the rattles in the last stage of the complaint, when the presence of the mucus is rendered loudly audible by the obstruction it presents to the free entrance of the air; but we are enabled, by the aid of an instrument called the stethoscope, distinctly to detect mucus in the lungs at an early stage of the disease, long before it is audible to the unassisted ear.

The stethoscope is the invention of the celebrated Laennec; and its principle of construction is founded on the superior property which solid bodies possess over aërial in the conveyance of sound. No mechanism can well be simpler. It consists merely of a cylinder, usually of wood, perforated throughout; thus forming a tube with very thick sides. One extremity of this hollow cylinder is applied close to the chest, and the other to the ear: when sounds that cannot be heard by the ear without this assistance, readily become audible.

In acute pulmonary or bronchial catarrh, the sounds first rendered to the ear by the stethoscope are aërial, and are either sibilant (whistling), or sonorous and grave; and have been compared, when proceeding from the larger air-tubes, to the

note of a violoncello, or the cooing of a dove. Afterwards they are liquid, as soon as phlegm begins to be secreted from the mucous membrane of the bronchi, or air-tubes, when the sound becomes *bubbling*, from the air in respiration passing through it. This is called the *mucous rhonchus* by Laennec.

As the disease abates, the wheezing heard in the chest is not permanent; for when the air-tubes are cleared by coughing, it ceases until the phlegm collects again.

In chronic-mucous catarrh, the noise made by the air and phlegm varies according to its intensity, presenting variations in force, frequency, and extent, which sufficiently enable us to recognise the different degrees of this affection.

In pituitous catarrh, the *mucous rattle* is heard over the greater part of the chest, thus shewing the extent of the disease; and few maladies, on this account, are more dangerous than this when it becomes chronic, since, by completely filling the air-cells, it eventually induces slow suffocation.

A person subject to a habitual defluxion on the lungs, in consequence of chronic-mucous, or pituitous catarrh, is at the same time affected, for the reasons already explained, with a constant difficulty of breathing; but with the turgid and thickened state of the mucous membrane of the bronchi, and the surcharge of phlegm in the air-cells that occur in these diseases, there is often

conjoined another cause of aggravation, particularly in the pituitous form of the complaint: I mean œdema, or dropsy of the lungs,—a disease frequently superinduced through the long continuance of the state of vascular engorgement, and the debility of the organ consequent thereon. A person thus affected is said, in common language, to be asthmatical.

When the lungs get into such a diseased state, we cannot wonder that they should be morbidly susceptible, and, therefore, exceedingly liable to catch fresh cold on all sudden and severe vicissitudes of the weather. Now, on this happening, all the old-standing symptoms are very much aggravated, and new ones of a more acute character are superadded. Febrile symptoms are present; the heat of the skin is augmented, and the pulse quickened; while the defluxion on the lungs is increased in quantity: and when this is expectorated by the violence and continuance of the cough, the patient feels relieved. This is the *humid asthma* of writers on the diseases of the chest; but it requires very little reflection to perceive how objectionable the name given to this complaint is, in a pathological point of view. No one will dispute that it is an essentially different disease from pure spasmodic asthma; and, in my opinion, where diseases differ so widely in their pathology, they ought not to bear the same name. Were the impropriety only a nominal one, it would be of no great con-

sequence; but identity of name is apt to lead the young, inexperienced practitioner, especially, to the belief of identity of nature, and, by this misconception, mislead him greatly in the treatment proper to each.

Cause of Catarrh.

The cause of this disease in all its forms is the same, if we except that variety of it called influenza; namely, exposure to cold, checking perspiration. This effect of the operation of cold is most certain to ensue from sudden alternations of temperature; as quitting a hot room to go out into the cold air, and the reverse. Whenever the body is much heated, either the sensible or insensible perspiration, or both, are augmented, and the blood circulates in the vessels with increased activity to their minutest ramifications. Now, it is to be recollected, that this increase of action and function is not confined to the surface of the body, but is going on with the same activity on the entire inner surface of the lungs.* Hence, though we may prevent the effect of cold in suppressing perspiration on the exterior of the body by additional clothing, we have no such means of avoiding its impression on the interior surface of the lungs.

* To prove to the general reader how much the lungs naturally perspire, it is only necessary to recall to his recollection the visible form the breath assumes on a frosty morning. What is then visible is nothing but the natural exhalation from the lungs, condensed by the cold.

When we consider the quantity of fluid which is constantly being given off by the lungs and skin in the form of perspiration, and reflect on what must be the immediate consequence of its sudden suppression, we at once perceive that this necessarily must be a state of vascular engorgement and turgescence. But the first effect resulting from the sudden application of cold air to the over-excited state of the mucous lining of the lungs, is the impression it makes upon the nerves of the part. The primary phenomena of inflammation shew that the *power* which circulates the blood, and which, indeed, is the same *primum mobile* that sets in motion, sustains, and governs all the functions of the living system, both in health and disease, is the principal, as it is the original, seat of the morbid action. Therefore, we are to understand the sudden suppression of pulmonary exhalation to arise from the impression primarily made on the nerves that govern the function.

Not only are the nerves governing perspiration affected by the impression made by cold suddenly applied when they are in a state of increased excitement, but also those which influence and regulate the circulation. The first and the immediate effect seems to be that of depressing the vital power possessed by the capillary vessels to forward the blood,—an effect which, in the first instance, appears confined entirely to the extremities of the veins and arteries. A partial stagnation of blood

in the part is the necessary consequence. These are the primary effects of the morbid cause, and are altogether local—the result of the atony induced in the ultimate ramifications of the arteries and veins: the heart and the large arterial trunks yet remain uninfluenced by the morbid condition of their extremities, and the blood is sent to the part diseased in the ordinary proportion. Now, let us revert to what has been just stated as the primary results of the sudden application of cold to the lungs, when in a state of augmented perspiration and increased vascular activity, and we shall be able to explain, I trust, in a plain, intelligible, and satisfactory manner, the hitherto unsettled views respecting the phenomena of inflammation in general. There is a stagnation of the blood in the capillaries, as has been said, and yet the ordinary quantity of blood is still being sent towards them by the larger arterial trunks: the obvious effect of this must be not merely to increase the congestion, but as every point of stagnation offers a point of resistance, it follows, as a mechanical consequence, that the impulsion of the recoil must return to the heart as the original instrument of the propulsion. The heart, we know, is an exceedingly sensitive organ, and when the state of stagnation is considerable, stimulated by the retropulsive shocks, it is excited to stronger and more frequent contractions; the increasing energy of the heart again reacts with augumented

force on the debilitated capillaries: and in this way we have instituted one of the most characteristic symptoms of inflammatory fever—a strong, full, and frequent pulse: it becomes strong and frequent, from the augmented energy of the heart's contractions; and it is full, from the engorged state of the blood-vessels consequent on the retention of the matter of exhalation. It were foreign to our present purpose to follow out the other phenomena of general inflammation, and expound the *rationale* of their origin; reactive influence; the connexion of the increase of heat with the frequency of the respiration and the quickness of the circulation, &c.: but, before leaving the subject, we may cursorily shew how it happens that the above phenomena are often averted from ensuing, provided the condition of the lungs and state of the constitution generally be healthy. For instance, the plethora, or over-fulness of the blood-vessels, proceeding from a sudden retention of the watery parts of the blood thrown out by pulmonary exhalation, and produced by the impression of cold, is frequently got rid of by an increased action of the kidneys. Another common result of this healthy condition of the general system is, that the nerves affected by the morbid impression often recover from their state of atony, before the local plethora has had time to accumulate so greatly as to be capable of reacting on the heart and larger arterial trunks, and thus induce constitutional dis-

order; and, therefore, it is obvious the moment the equilibrium of action is re-established between the capillary system and the heart and larger arteries, or, in other words, between the quantity of blood supplied to the minute arteries, and issued by the capillary veins (an effect resulting from the nerves of the part recovering from their atony), all danger of inflammation, ensuing in consequence of the impression of the cold, ceases. It is scarcely necessary to add—for the inference is self-evident—that it requires a certain degree and extent of stagnation in the capillary system before this can react on the heart; and hence it is that there are many local inflammations that neither influence nor at all disturb the general circulation.

Though the sudden alternation of temperature be the most common cause of catarrh, nevertheless the circumstance of alternation from heat to cold is not necessary to produce the disease; and it is a mistake to think it essential. Long exposure to cold, by which the body becomes completely chilled, is sufficient to cause the disease without any alternation at all; such as riding outside of a carriage in a cold, raw day; or sitting up late at night, as not unfrequently happens to studious people, after the fire has gone out. Frequently too deeply absorbed in what occupies their attention, they are only awoke to a consciousness of the circumstance by the severity of the general chill pervading their feeling; and the next conviction

is, that they have caught a cold. The person feels this before he has had time to alter the temperature; and, therefore, the disease institutes itself without the aid that sudden warmth adds to the reaction resulting from the recoil of the impulsion produced by the local stagnation of the blood in the capillaries. The allusion, however, which has been just made to the sudden application of warmth, suggests the further remark, that, as the indirect effect of the capillary congestion is to stimulate the heart to more powerful action, so the direct operation of the alternation from cold to sudden heat is to produce the same result. Heat, when excessive and sudden, always quickens the pulse, whatever be the state of the system, and, therefore, readily advances the inflammatory progress of a cold.

Of the Treatment of the various Forms of Catarrh.

The review we have taken of the theory of inflammatory action, will very much prepare us to understand the *rationale* of the treatment proper to be adopted for its removal.

At the beginning of acute catarrh, when, through the different reactions already explained, inflammatory action is fully established in the mucous follicles, there is nothing we can have recourse to, with greater certainty of benefit, than an active aperient. The therapeutic operation of purgatives

in this disease, affords a beautiful illustration of the doctrine of the tissues.

If we examine into the intimate sympathy existing between similar, though distant, tissues, we shall find that they are all subject to the same forms of diseased action; and that this sympathetic law of the system is not limited in its agency to the propagation alone of morbid associations, since it extends its reciprocity of influence likewise in a healing point of view; and we hence find *those medicines the most efficacious which more particularly operate on a tissue similar to that which is the seat of the disease*. Now, in the instance of catarrh, it is the mucous membrane of the air-passages that is affected; and it is the mucous membrane of the intestines on which purgatives principally act. The therapeutic connexion between the tissue diseased and the tissue principally operated on by medicines has not hitherto been pointed out; or, if alluded to, it has never been sufficiently insisted upon. I am therefore desirous, on this account, of drawing a moment's attention to the demonstration of its correctness, by a few observations. For instance, we see the fact exemplified in that inflammation of the eye called *conjunctivitis;* and though in all the inflammations affecting the other tissues of this organ purgation be useful, yet in none is it so manifestly beneficial as in the inflammation of its mucous tunic. We find purgation not less eminently useful in *mycteritis,*

or inflammation of the mucous lining of the nostrils — coryza, as it is more commonly called. It proves equally efficacious in inflammation of the mucous lining of the fauces (*faucitis*); in inflammation of the tonsil (*tonsillitis*), which is nothing else than an agglomeration of mucous follicles; and not less so in catarrh. To prove by contrast the correctness of the position I am endeavouring to establish, I may slightly allude to the fact, that we do not find purgation useful, but the contrary, in the inflammations which affect the other tissues of the lungs. It is of no benefit in pneumonia, or that inflammation which affects the parenchyma, or substance of the lungs: neither is it useful in pleuritis pulmonalis, or the inflammation of its serous envelope. But the subject is too fertile, and capable of too extensive amplification, to be fitting for discussion on the present occasion.

There are effects, however, resulting from the operation of purgatives, which are frequently of great service, and are quite distinct from those which result from identity of tissue. One of the direct and most obvious indications for the employment of purgative medicines is the evacuation of the contents of the bowels: the fæces themselves often become a secret source of very general irritation, either by their undue retention or altered nature; and, in either case, purgation obviously does good, by the removal of the irritating cause.

Purgatives, again, may be made to act as

powerful evacuants, and thus to operate as direct sedatives in reducing excessive action. Bleeding is rarely requisite in catarrh, unless when complicated with inflammation of the pleura, the substance of the lungs, or with a strong determination of blood to the head; and, as purgation abstracts only the watery parts of the blood, it often becomes a more desirable means in certain diseases, and catarrh is among the number, of diminishing the quantity of fluid current in the circulation than the more direct means of venesection. It is a loss from which the system much more readily and speedily rallies, than from the direct abstraction of blood itself; in illustration of which, we cannot cite a more striking proof than what happens in Asiatic cholera. Here, though the abstraction of the serosity of the blood by the bowels be at times so prodigious as actually to render the blood viscid, yet we may all have witnessed with what astonishing rapidity patients recover from this extraordinary loss of its more liquid parts.

The purgatives most to be preferred in the first, or acute, stage of catarrh, are the saline; to which may be added, a little of some of the cathartic tinctures or infusions (Nos. 1, 2, 3, and 4).* There

* (1) ℞ Infusi Sennæ, ʒx.
Tart. Potassæ, ʒiv.
Mannæ Opt. ʒij. Solve.
Deinde adde Tinct. Sennæ, e. ʒij. M.
Sit haustus aperiens.

is one peculiarity and advantage possessed by the saline purges, which is, that, however powerfully they may operate, they are not apt to excite inflammation in the bowels. Another advantageous circumstance is, that they are more antiphlogistic than any other class of purgatives, producing not only a much greater chilliness on the surface, but likewise a similar feeling in the bowels. By the effect which purgatives produce in lessening the quantity of blood circulating in the capillaries, they allow these vessels to contract to their natural dimensions, and diminish, as another consequence, the quantity of heat evolved; thus abating, at the same time, two of the principal morbid phenomena of inflammation—the augmented temperature, and the vascular turgescence.

(2) ℞ Magnesiæ Sulph. ʒiv.
Mannæ Opt. ʒij.
Tinct. Jalapæ, ʒij.
Aquæ font. ʒx. Solve et M.

Fiat haustus aperiens.

(3) ℞ Pulp. Tamarind. ℥ss.
Potassæ Supertart. ʒj.
Sodæ Tartar. ʒiij.
Aquæ bullientis, ℥v. Colat.
Adde Aquæ Cinnam. ℥j.
Antim. Tart. gr. ss. M.

Sumat tertiam partem, et repetatur dosis post horas duas, nisi alvus prius respondeat.

(4) ℞ Magnesiæ Sulph. ʒvj.
Infusi Rosæ, ℥jss. Solve.

When the operation of the purgative has ceased, and the capillary vessels have recovered from its derivative effects, and again become congested, though in a lessened degree, we are next to endeavour to remove the remaining hæmostasis, by opening the exhalents by diaphoretics. In slight cases of catarrh, a gentle perspiration may be excited by bathing the feet in warm water at bed-time, and taking afterwards a teaspoonful of antimonial wine in some warm white wine whey, or the draught below, marked (5).* When the affection is severe, the patient ought not only to confine himself to the house, but to his bed, and excite and keep up a gentle perspiration by occasional doses of a diaphoretic mixture (6),† or the saline draught, aided by some other sudorific (7).‡

The manner in which diaphoretic medicines

* (5) ℞ Liquor. Ammon. acet. ʒiv.
Mist. Camphoræ, ʒvj.
Spt. Æth. Nit.,
Vin. Antimon. āā ɱxxx.
Syrupi Tolut. ʒij. M.

† (6) ℞ Antimon. Tart. gr. ij.
Misturæ Camph. ℥v.
Syrupi Rheados, ℥j. M.
Capiat cochlearum amplum omne bihoriâ.

‡ (7) ℞ Pulv. Jacobi veri,
Camphoræ, āā gr. iij.
Pulv. Ipecac. gr. i.
Confect. Aromat. q. s.
Fiat bolus tertiâ vel quartâ horâ sumendus.

prove beneficial, is mainly by re-establishing the equilibrium of the circulation. When perspiration is equal and general, the capillary vessels are liberated from all congestion by the action of the exhalents; for the exhalents are those minute vessels which are believed to proceed from the capillaries, and opening on the surface of the various membranous linings and envelopes of the body, both external and internal, pour out the watery matter of exhalation upon them. This, on the surface of the body or skin, is called perspiration; and on the inner surface of the lungs, exhalation. The laws of hydraulics, therefore, are partly sufficient to teach us the therapia of diaphoresis in these cases.

But this operation of sudorifics has another effect, which is particularly beneficial in the first stage of a catarrh. Acute inflammation at its onset invariably checks secretion, and hence the cough attending catarrh is dry at first, but, if we can succeed early in producing general perspiration, the inflammatory congestion of the mucous follicles is relieved, secretion from them is renewed, and its viscosity is much diluted by the copious exhalation going on in the lungs. Hence, by perspiration, cough is always loosened, and expectoration made much easier.

Nothing more favours free perspiration than the copious use of warm diluent drinks, and they ought on this account to be taken freely when we wish to promote it. There is even something soothing

in their warmth in passing down the œsophagus into the stomach, acting thus after the manner of an internal fotus. Barley water, somewhat acidulated with the juice of a lemon, to which a little gum arabic may be added, answers exceedingly well; very thin gruel, flavoured in the same way; white wine whey, or weak linseed tea, may be used for the same purpose.

At first, it is not advisable to prescribe specially for the cough, beyond recommending some bland demulcent, such as a linctus (8), or a mucilaginous mixture (9); but as the inflammatory and

(8) ℞ Confect. Rosæ Caninæ, ℥ii.
Succi Limonis,
Ol. Amygdal, āā ʒii. M.
Fiat linctus.

Another:—

℞ Mellis Opt. ℥ii.
Succi Limon. ʒiv.
Syrupi Tolut. ℥i. M.

Another:—

℞ Emuls. Amygdal. ℥ii.
Confect. Rosæ Caninæ,
Syrupi Limonis, āā ℥i. M.
Sumat cochl. medium, p. r. n.

The following make an exceedingly good cough drink:—Dissolve half an ounce of gum arabic in a quart of barley water, to which add three dessert spoonsful of lemon juice.

(9) ℞ Mucil. Acaciæ,
Emuls. Amygdal. āā ℥iii.
Syr. Tolut.
Aquæ Cinnam. āā ℥i. M.
Sumat cochl. ij. ampla tusse urgente.

febrile symptoms abate, we may then safely interfere to remove the cough, and diminish the expectoration. For both purposes, there is nothing so efficacious as opium, or its preparations, in a proper dose, combined with something that will throw its operation on the surface. Dover's powder answers these intentions, or we may conjoin it in the form of tincture, with an antimonial (10), or in proper proportion with the mucilaginous mixture (9).

The cough is usually most troublesome at night, therefore, while the mixture (9) is most convenient for use during the day, the draught (10) is best taken at bed-time.

So much for the treatment of acute catarrh. It now remains to consider that which is proper for its other forms, the chronic mucous, the pituitous, and chronic pituitous catarrh.

Acute mucous catarrh, is almost sure to become chronic by neglect. A cold, attended with cough, if neglected at the beginning of winter, is liable to continue in certain constitutions during the whole season : indeed, I know of no disease liable to such repeated relapses as a cold. Where the constitu-

(10) ℞ Tinct. Opii, ♏xv. — xx.
Vini Antimon. ♏xx.
Syrupi Tolut. ʒii.
Aquæ font. ʒx. M.
Fiat haustus horâ somni capiendus.

tion is sound, and the cough and expectoration continue, rather from a want of care on the part of the patient, than from any organic disease of the lungs, a little attention on his part, no longer to expose himself to the vicissitudes of the weather, aided by some demulcent expectorant, to which a sedative is conjoined, will ordinarily be all that is required; but when this fails in checking the cough, and diminishing the expectoration, we have reason to apprehend that their continuance is attributable to some other cause than simply a want of attention. There is, in fact, no incidental cause of consumption, unfortunately, more common, than a neglected cold; and thousands die annually of this disease, the victims of their own heedless indifference — but of this more immediately.

Mucous catarrh, when it has become chronic, loses its first characters; the state of congestion in the minute blood-vessels of the mucous membrane and follicles continues, but the nature of the engorgement differs essentially from that of the acute stage. No extra quantity of blood is now directed to the seat of the disease by the arteries, and the stagnation of blood entirely results from the exhaustion and weakness left in the extreme branches of the veins. Since the nature, therefore, of the diseased condition of the parts is completely changed, so likewise must the character of our treatment alter. The antiphlogistic treatment, or that which diminishes and controls the circulation, if adopted in the

chronic stage, would, by increasing the debility only aggravate the symptoms; and, therefore, our obvious purpose should be the reverse — that of restoring the lost tone of the part. It is on this account that opium, which is so prejudicial in the first stage of a catarrh, becomes so very beneficial in the second, especially if care be taken to counteract its narcotic operation. Another object should be, so to stimulate the arteries secreting the mucus into the follicles, that, by increasing the quantity of the secretion, it may be rendered less viscid, and thereby more easily brought up by coughing, or in other words, more freely expectorated. Now, the medicines which appear best to promote this intention, are squills, ammoniacum, the balsams, myrrh, and certain of the fetid resins. These, variously combined, form often very efficacious expectorants. (11, 12, 13.)

(11) ℞ Mucil. Acaciæ, ℥ii.
Mist. Ammon. ℥iii.
Syr. Tolut. ℥i.
Acet. Scillæ,
Tinct. Opii, āā ʒss. M.
Capiat cochlearium amplum ter quaterve in die.

(12) ℞ Mist. Ammoniaci, ℥vss.
Vini Ipecacuanhæ, ʒiss.
Tinct. Galbani,
Oxymel. Scillæ, āā ℥ss.
Syrupi Tolut. ℥iss. M.
Sig. Cochl. duo 4tis horis sumendum.

There is strong reason to believe, that certain medicines exert a specific operation on the mucous membrane of the lungs. Of this character are ammoniacum, myrrh, squill, and some others, which increase the quantity of the secretion; while, on the other hand, there are other substances that check the secretion of mucus when too abundant, and of this nature are the balsams and turpentines. But, in saying this, I beg not to be misunderstood. They lessen the expectoration, not by checking it through any astringent operation, but by restoring the healthy tone of the secreting vessels. The effect of opium, again, is that of diminishing all the secretions indiscriminately, excepting that of perspiration.

Some explain the expectorant operation of squill, by its power of promoting absorption, which, by diminishing the quantity of fluid poured out, thus facilitates the expectoration of the remainder; but

(13) ℞ Pulv. Scillæ, gr. x.
Gum. Res. Myrrhæ, ʒj.
——— Ammon. ʒss.
Syr. Tolut. q. s.

Contunde simul intime, deinde divide in pilulas, xxiv. Duæ omne nocte et mane capiendæ.

Or,

℞ Pulv. Scillæ, ℈j.
Extr. Hyosc. ʒj.
Tart. Antim. gr. i. Fiat pil. xx.

Sig. Duæ nocte et una mane sumendæ.

this manner of accounting for its effect does not appear to me anywise satisfactory. Absorption of the more liquid parts would render the remainder only more viscid and tenacious, and therefore more difficult to expectorate. On the contrary, squill, in my opinion, has a direct stimulant effect on the mucous follicles of the lungs, which not only lessens the secretion in quantity, but causes it to be separated in a more liquid and natural form. That squill operates as a stimulant on the pulmonary mucous tissue, is proved, on the one hand, by its injurious effects in all acute inflammatory affections of the lungs; and not less so, on the other, by its efficacy in the chronic stage of the disease, of which we are treating.

Myrrh appears not less determinate in its specific operation on the mucous tissues, pulmonary as well as others, for it is frequently prescribed with great benefit in amenorrhæa, combined with iron, and its *modus agendi* in this case appears to be intimately connected with its stimulating effects on *the vessels of the mucous lining* of the womb. The same specific tendency shews itself in the medicinal properties of all the balsams — they are deemed remedial only in affections of the same tissue, whether pulmonary or genito-urinary, attended with relaxation.

The determination I speak of, is proved, not only by the remarkable efficacy of these substances, in many cases wherein the mucous tissue

is the seat of the disease, but, also, by the corroborative circumstance of our being able to detect their passage out of the body, by one of the mucous membranes,—that of the lungs. This fact is rendered no less undeniable than sensible, by their tainting the breath with their peculiar odour. It would appear, therefore, that they enter the blood unassimilated, and are again excreted by the exhalents of the lungs, without their medicinal principle having undergone much, if any, alteration. Of this nature, are ammoniacum, copaiva, balsam of Tolu and Peru, myrrh, galbanum, and assafœtida. We know that a circumstance precisely similar, and more demonstrative still, takes place in the kidneys, wherein analysis enables us to detect various substances in the urine, that have passed unchanged through the circulation: hence, it is not unreasonable to infer, that it is in their exit through the mucous membrane of the lungs, the expectorants here spoken of exert their medicinal powers, and thus prove remedial in its diseases.

We have but few observations to make on those forms of catarrh, known as the pituitous and the infantile.

With regard to the first, we have already stated our opinion, that it differs in no respect from mucous catarrh, but in what is ascribable to the nature of the patient's constitution. It is evident, that, from the debility which characterises

this complaint, even in its acute stage, we are prohibited from controlling the vital powers by a use of the same means to the same extent, as in common mucous catarrh affecting the naturally robust and healthy. This is a stage also, which lasts but for a short period, is easily subdued, and readily passes of its own accord into the second or chronic stage. In the first instance, therefore, the disease requires us to employ with great circumspection and moderation, the means which were pointed out in the treatment of acute mucous catarrh; and to adopt with less reserve, and more diligence, those recommended for the removal of its chronic form. As the only difference between pituitous and mucous catarrh, rests in the state of the patient's constitution, and not in the essential nature of the two diseases (for in that I believe them to be strictly identical), the treatment proper to both, is the same in principle, requiring only modification. I may merely observe, that, in addition to the expectorants already noticed, we may in some cases call in the aid of digitalis. This is the only expectorant that seems to act as such, by promoting absorption. Chronic pituitous catarrh, we have mentioned, goes by various other names, *humoral asthma*, *dyspnœa aquosa*, *catarrhus senilis*, in all of which, the lungs are deluged with watery mucus. Now, digitalis in this disease, appears to act beneficially, by exciting the absorption of the more fluid por-

tion of this mucosity, thus relieving the difficulty of breathing, and the irritation and constant coughing to which its great accumulation gives rise. However, there is a certain degree of caution required in the use of digitalis in pituitous catarrh, lest it should depress too much the already too enfeebled vital powers; and the best way that I know of preventing this effect, is to direct its operation on the kidneys. (14, 15).

Chronic pituitous catarrh of old standing, is for the most part accompanied with dropsy of the substance of the lungs (*œdema pulmonum*). In such cases, the absorbent virtues of digitalis become our sheet-anchor; and, both with and without this ordinary concomitant of the disease, I have, at times, seen much benefit derived from the astringent and tonic powers of small doses of the sulphate of zinc.

The same may be observed of the treatment of infantile catarrh which has been said of the pituitous: it, too, owes its peculiarities to age and constitution. It has already been remarked, that the frame of

(14) ℞ Fol. Digit. purp. ʒi.
Aquæ ferventis, ℥viij.
Post horas duas cola, deinde adde
Spt. Ætheris Nitr. ℥ss. et M.
Capiat cochl. amp. ij. 4tis horis.

(15) ℞ Fol. Digit. purp. gr. vi.
Supert. Potassæ, ʒii. M.
In chartulas vi. dividendum, quarum sumat unam ter in die.

a child is lax, and abounding in juices; therefore, when an infant of very tender age, is affected with mucous catarrh, the afflux of phlegm into the air-tubes and cells, is often so great, as to suffocate the infant from its accumulation—an event which is likewise accelerated by the weakness of the voluntary powers at this early period of life, and the want of sufficient intelligence to exert them.

The same not unfrequently happens in very old people, from sheer exhaustion and debility. Now, what are we to do in such cases? Nature cannot assist us, in either instance, of her own accord; but, fortunately, we have one auxiliary in reserve, and that is, an expectorant which acts on a mechanical principle—I mean an emetic. I have repeatedly witnessed the life of an infant saved from the imminent danger of instant suffocation, through the action of an emetic. By its operation, all the expiratory muscles, both voluntary and involuntary, are thrown into strong convulsive action, and thus it happens, that the mucus in the lungs comes to be ejected simultaneously with the contents of the stomach.* In conclusion, I have only further to observe, that though infantile and senile catarrh resemble each other in the abundance of the phlegm poured into

* The contents of the stomach, by the way, often consist entirely of mucus, which the child had swallowed.

the lungs; with this, the resemblance between the two diseases ceases: the former is an acute inflammatory affection, obliging us to resort to active antiphlogistic measures for its relief, which, if employed with a similar energy in the latter, would be most injurious.

CHAPTER II.

OF CONSUMPTIVE COUGH; OR, PHTHISIS.

As consumption very frequently begins with a cold, and at first is generally mistaken for it, the preceding observations on catarrh seem naturally to lead us to the consideration of this prevalent and very fatal disease. A difficulty hence arises at the outset, to detect its real nature from the trivial character of the incipient symptoms. But if such obstacles present themselves to the experienced physician, towards an exact knowledge of this insidious malady at its commencement, how much more difficult is it for the patient to suspect its nature on its aggression, when we even see him, though on the very brink of the grave, still unconscious of all danger, and indulging in projects for future accomplishment!

In the observations that follow, the author does not pretend to propound any novel views respecting this untractable malady: he will be satisfied if, by strictly adhering to the facts that are best ascertained, he succeeds in laying down that plan of

treatment most in accordance with a rational theory of the phenomena, and which a cautious experience has best justified by results.

The great difficulty to a clear understanding of the real nature of the disease, is the obscurity which envelopes its commencement. Cough, in the first instance, is simply a catarrhal symptom, and cannot, as Andral observes, safely be depended upon; for, though it very commonly begins as a cold, yet it happens not unfrequently that patients are unable to attribute its origin to any precise period, or particular circumstance, whatever.

One of the first symptoms leading us to suspect the real nature of the disease, is the extreme liability of the patient to the frequent recurrence, on the slightest occasions, of a short dry cough. At first there is no expectoration, except a little frothy phlegm; the breathing is slightly impeded, a sense of tightness felt across the chest, and the pulse somewhat accelerated. If on repeated attacks of these symptoms we perceive the patient gradually become emaciated,* and the cough more troublesome on every successive attack, we have cogent reason to conclude, especially if the disease be hereditary, that these apparently slight attacks of

* It was from this symptom that the Greeks called this disease *Phthisis*, which signifies extenuation, or leanness, from φθίω, to dry, or cause to dry: a symptom which is more certainly diagnostic, in my opinion, of consumption, in its incipient stage, than any other.

cold are, in fact, the incipient symptoms of consumption.

The disease may go on in this way for some time, without making much apparent progress, but its continuance can never be relied upon, and ought not, therefore, to be neglected: for while, on the one hand, we have known the disease in this state to be protracted for years; on the other, consumption will, at times, run through all its stages in the space of a very few weeks.

As the disease progresses, the cough becomes more troublesome, especially at night and in the morning; the expectoration increases in quantity, and alters by degrees in its character: it gets more viscid and opaque, not unfrequently streaked with blood; and finally assumes a greenish, purulent appearance. In the meantime, the emaciation increases with the languor and debility, and also the difficulty of breathing. The cough is now no longer short and hicking, but strong and violent—an alteration which proceeds from the inflammation of the lining membrane of the lungs pervading the whole extent of the air-tubes: but the part where the greatest uneasiness is felt, is about the larynx and upper portion of the trachea. This, undoubtedly, is caused by the long continuance and violence of the cough, and not unfrequently ends in ulceration. Sometimes blood, instead of merely tinging the sputa, is spit in abundance; pain is felt under the breast-bone, which is aggravated by

coughing, or lying on one side: though in some cases no pain is experienced, only an inability to lie on the side affected. At first, the pulse is not much quickened, but as the disease advances, and the expectoration becomes more and more abundant, it gets full, hard, and frequent; the palms of the hands and soles of the feet suffer from a sense of burning heat; febrile exacerbations come on in the evening, and shortly assume all the characters of hectic; the urine deposits a copious red sediment on standing; nevertheless, the tongue continues clean and moist, and the appetite good. But as the disease goes on progressively advancing, the inroads it makes on the constitution become every day more apparent; the eye gets blanched, and assumes a pearly lustre — it sinks deep into the orbit; the cheeks are hollow; their bones, in consequence, appear prominent; and towards the close of the disease, as the substance of the lungs is expectorated, the chest falls in: a circumscribed flush on one or both of the cheeks is observable during the hot stage of the hectic; and, after a feverish and restless night, profuse perspirations break out towards morning, when the exhausted patient usually falls asleep. In the beginning of consumption, costiveness very usually prevails; but in its latter stages, a colliquative looseness comes on, and greatly augments the general debility and emaciation; the hair falls off, and the nails become curved; a dropsical swelling of the

ankles supervenes on the daily increasing exhaustion; at length the extremities become cold, the pulse ceases to beat, and death puts a period to the disease.

Such is the ordinary progress and termination of consumption. Let us now proceed to an examination of what has been ascertained to give rise to this train of symptoms — the formation and developement of what have been named *tubercles in the lungs.*

Pathogeny, or the doctrine of the primary causes of disease, is one of the most interesting subjects of medical investigation; and not more important than difficult. With respect to tubercles, which, in fact, form the essential disease in consumption, we are still in the dark as to the precise nature of the morbid action by which they are produced: their primary character, even, as a morbid product, is not perfectly ascertained. Andral deems the rudiment to be a minute portion of secreted fibrine; Gendrin, a small clot of effused blood. That simple inflammation cannot of itself form tubercles is abundantly well established, since many persons pass through life, after having suffered numerous attacks of inflammation of the pulmonary tissues, without their ever inducing tuberculous formations or depositions. The generation, therefore, of tubercles in different parts of the body, has been ascribed to what is called diathesis — the tubercular diathesis: a mode of

elucidation, by the way, which goes very little, if any thing, beyond the enunciation by a learned term of the fact it pretends to explain.

The latest account given of tubercles is by Rochoux, from observations made with the microscope.

The word tubercle, according to its modern acceptation, is used to designate a morbid production, or deposit, of a rounded form, variable in size, consistent, composed of a grayish white matter, at first semi-transparent, latterly opaque, which, after a time, softens and dissolves into a creamy mass. This is the regular character of a tubercle, and the progress of change just detailed has obtained the name of "ripening."

Tubercles, at their commencement, are usually described as small grayish bodies, nearly opaque, or, at most, semi-transparent, somewhat solid, and about the size of a millet-seed; but M. Rochoux, in our opinion, has satisfactorily demonstrated that this is more correctly to be viewed as the second, rather than the first stage of the existence. If we examine the tissue of that part of the lung in the immediate vicinity of a dense and opaque tubercle, at a superficial glance the lung appears perfectly sound; but, when more intimately investigated, it will be found to contain tubercles in their real incipient state. An incipient tubercle, according to this minute observer, exists in the form of a small gelatinous body, not more than the tenth of

a line in diameter, having a pearly lustre, and susceptible of presenting all the intermediate shades between pearly gray and the colour of jelly slightly tinged red. Cut through the middle, its substance is seen to be perfectly homogeneous, and without the slightest trace of blood-vessels.

However small tubercles may be, they are never altogether liquid. When they have attained the tenth of a line in diameter, they have assumed a distinctly rounded form, and adhere to the adjoining tissue by a multitude of very minute filaments, which break by the slightest pull; the broken extremities of which form round the tubercular molecule a sort of tomentum, like eider-down. Rochoux has not been able to detect by the microscope any enveloping cyst, as averred to exist by Bayle and others. The filaments spoken of above are so thick and numerous, that if a tubercle, in this early stage of its formation, be put into water, it appears lost in the midst of a kind of cloud: on again removing the tubercle from the water, these downy filaments, which floated in the liquid, collapse, and the central molecule again becomes visible.

As a tubercle enlarges, it undergoes a notable change in its colour; and the shining gelatinous appearance gradually fades, and is replaced by a dull gray. But a question of considerable difficulty arises, how to account for their enlargement. The apparent absence of all vessels in tubercles, or of

any vestige of organisation, has led to the very general rejection of the idea that they enlarge by nutrition. It is thought by some, that they grow by external accretion. According to Rochoux, on the contrary, they increase in size by successive degenerations of the healthy structure from a morbid action of the formative function of the part: by which he means, that, when this takes place, from whatever cause, as the olden structures of the body are continually being absorbed and reproduced, the new one formed in its stead by the formative function is tuberculous. And hence, Rochoux infers, that if this process can go on at one point of the lungs, it can, for the same reason, shew itself in many thousands of others; and that, in fact, it is by the agglomeration of several tubercles, seated close to one another, that large tubercular masses are formed.

There is one strong circumstance stated by Dr. Carswell, to exemplify which I had leave to copy from his work on *Morbid Anatomy* the plate in the frontispiece; namely, "that tuberculous matter is in general formed, *ab origine*, on the secreting surface of hollow organs, where it is seen as distinctly as if it had been thrown into them from a syringe." This circumstance is represented in the plate, where tubercular matter is seen filling numerous air-vesicles and several of the bronchi. Tubercular matter has likewise been found in the lymphatics and lacteals, in mucous follicles, and

even in the blood-vessels. Now, it is not possible to conceive, according to the known laws of physiology, how tuberculous matter, when so situated, can be aught else than either a deposition or secretion; since, under such circumstances, it never could have been the product of its own organisation.

It is a fact, that has been long generally known, that different tubercular masses, when situated close to each other in the lungs, are visibly separated from one another before they agglomerate by thin laminæ of cellular membrane; and the question is, What becomes of these after the different tubercles have coalesced, and before they soften? It is difficult, and very improbable besides, to imagine that it becomes assimilated to tuberculous matter; and if not, are we to say it is removed by absorption, without admitting, at least, interstitial vascularity? For my part, as far as admitting this goes, I see no reason for refusing to do so. I am aware, that some believe that they have been able distinctly to see their proper vessels; but, until they can shew me them organising tubercular matter thrown out on the surface of a hollow organ, I must still retain the opinion that a tubercle is an unorganised deposition. We are, therefore, I apprehend, at present only warranted by facts to conclude, whenever we find blood-vessels pervading tubercular masses, that they are merely organised vestiges, appertaining

to the interstitial cellular membrane of the part, and not properly to the tuberculous matter itself.

But it must, after all, be confessed, that the question is still freely open to much further research, and that we may safely wait for better ascertained data before we form decided opinions on the subject. Nevertheless, this circumstance may not altogether preclude us from investigating those phenomena attendant on the morbid process, which our knowledge enables us to discuss more satisfactorily.

The researches of pathology are every day throwing more and more light on the subject of inflammation, and establishing the circumstances that modify its phenomena; among which, none are better ascertained, or more undeniable, than the influence of tissue and structure on the character of symptoms: but not less powerful, in this respect, is the particular constitution of the patient. Under this latter head are comprised the various changes which the different periods of life and the difference of sex give rise to; the deteriorating operation of previous disease; and in an especial manner, as referable to our present subject, the original innate conformation of the system.*

There are various circumstances tending to demonstrate, in the tubercular diathesis, *a feeble*

* It is to the peculiarities of original conformation that the terms *idiosyncrasy* and *diathesis* apply.

conformation of the capillary system. This constitution of the frame (the tubercular) is denoted, externally, by two different and opposite complexions. In the one, the skin is fair, clear, delicate, and florid; the eyes are blue, large, and full; the hair is fine, silky, and light-coloured; the external veins are large; the neck is usually small and long; the shoulders prominent; and the chest narrow. There is great natural sensibility; the cast of character frequently is pensive and mild; and the want of animal vivacity is evinced in the quiet, sedentary, and retired habits of the individual. In the latter, on the other hand, the complexion is not clear; on the contrary, it is dull: neither is it fair, but often the reverse; the cheeks are for the most part colourless; there is no great sensibility, and the mind may rather be said to be sluggish than sedate. In both, the muscles are soft and flabby.

Now, it is our intention to shew that this constitutional, lax, and feeble condition of the capillary system, is intimately connected with tubercular formations; feebleness, more especially, characterising their state in the florid: while laxity prevails in the dull complexion. And there are certain outward tokens of this condition of the capillaries which may again be briefly adverted to, in corroboration of its existence and connexion with a consumptive tendency.

It is the vascular system, as every physiologist

knows, that forms the body out of the elements of the blood; and it is the extremities of the arteries, which, from their resemblance in minuteness to a hair, are called the *capillary* arteries, that are the active agents in the construction of it. When, therefore, the entire arterial system is vigorously formed, as the actual agent of growth, it is obvious that the whole constitution of the body must naturally partake of the efficient character of the agent; and it is almost supererogatory to add, that a feeble and relaxed condition of the same system must equally impress its character on its works. Now, in the predisposed to consumption, what is the fact? Is not the skin descriptive of this character, thin, and, therefore, florid, in some, because the blood can be readily seent hrough it; and fair, from the delicacy of the layer (*rete mucosum*) which imparts to it its colour? In others, on the contrary, the skin is dull, scurfy, and dirty-looking; arising, as we conceive, from the lax texture of the extreme cutaneous vessels by which they perform their function, not only feebly, but impurely. The growth of the bones not less clearly denotes the debility of the formative office of the capillaries; the figure is slender and delicate, and the chest is imperfectly developed.*

These may fairly be assumed as undeniable

* Strumous persons are particularly liable to chilblains: another proof of the feeble powers of the capillary system in this diathesis.

data. Let us now try to apply them to the elucidation of that obscure and difficult problem in pathology, the primary formation of tubercles. We have before noticed the change which the meaning attached to the term inflammation has undergone since its essential characters have been better understood. Not only is it admitted that the principal seat of its phenomena is in the capillary arteries and veins, but also that a partial stagnation of the blood they contain, takes place; and we further know, that the operations of inflammatory action, in a sub-acute form, are often so obscurely indicated by symptoms, particularly in structures possessed of no great natural sensibility, such as the substance of the lungs, that frequently it is by its effects alone we are enabled to determine that it has existed.

Now, the opinion we have formed of the primary origin of tubercles is this, that when the natural conformation of the capillaries is of the texture described as characterising the tubercular diathesis, causes so slight as frequently to escape notice, or more usually still, repeated colds, are sufficient both to produce, and leave in the capillaries of the lungs, a state of hæmostasis identically the same as that characteristic of more energetic inflammatory action in other constitutions. Modified, however, by their own lax and feeble nature, and likewise somewhat, perhaps, by the texture of the blood, the phenomena which result in conse-

quence of this partial stagnation, differ from those which ordinarily take place: a matter of a gelatinous appearance is poured out from the different points of congestion, forming thus, as it appears to us, those primary rudiments of tubercles, discernible only by the microscope, and first described by Rochoux.

The effect of hæmostasis, however induced, is to cause a fluid to be effused of a nature varied according to that of the morbid action giving rise to it, the tissue in which it is seated, and the diathesis and habit of body, especially, of the person it affects. In certain cases this possesses a watery consistence and character, from the little albumen it contains; in others, the albumen so abounds that it readily coagulates of its own accord, and is prone to organisation; while, in the consumptive diathesis, if Rochoux's observations be correct, it appears in the form of jelly, having no tendency to become organised,* but, by a spontaneous change it is capable of undergoing, is convertible into that matter we designate "tuberculous."

There are numerous circumstances present in the diathesis alluded to, which evince that there is something peculiar in the blood of the consumptive. Dr. Carswell, among others, entertains this opinion. "It is necessary to remark," observes

* When it does so, it is only under rare and particular circumstances.

this discriminating writer,* "that the formation and manifestation of this matter (the tubercular), as a morbid product, cannot take place, unless the fluid from which it is separated—the blood—has been previously modified." But whether this be conceded or not, there cannot be a doubt that the separation of so much albumen from the blood in the abundant depositions of it in the lungs and elsewhere, cannot fail to alter the nature of the latter in a very material degree;† and it is a fact ascertained by its artificial abstraction, that in the hectic stage of consumption, though the colouring matter (hæmatosine) be sufficiently abundant in the blood-globules, there is a considerable deficiency of fibrine.

If, then, it be so probable that a gelatiniform matter, having no ready aptitude to assimilate to blood, is formed by a peculiar morbid state of chylification, we cannot wonder at finding it separated in the form of a rudimental tubercle in various organs of the body in this diathesis; that is, as a gelatinous point, such as it is described by Rochoux. The great tendency which this substance has to separate itself even from the chyle before it enters the blood, appears to be demonstrated by the fact, that the lacteals on the hither side of the conglobate glands of the mesentery are

* Morbid Anatomy, art. "Tubercle."

† Tubercular matter has been ascertained to consist chiefly of albumen, with various proportions of gelatine and fibrine.

not unfrequently found filled with tuberculous matter. Now, whence comes this alteration? The blood cannot well be supposed to alter itself; we are, therefore, of necessity referred back to the original source of this fluid for any peculiarity it may possess, and there, I apprehend, we shall find it: we shall find it, in reality, in the first processes of sanguification, or, to speak more definitely, in a diathetic peculiarity of the digestive function in forming the original elements of the blood; that is, the constituents of the chyle.

Evidences are becoming every day more circumstantial and numerous, to make it more and more probable that the original source of many diseases, hitherto imputed to particular organs, arises from a vitiated condition of the function of chylification. Diabetes, I conceive, comes under this head, and so does gout. Saccharine matter has been detected in the blood of the first of these diseases: and uric acid, or, at least, its base, urea, abounds in the blood of the other,—both principles that are formed in inordinate proportions, in my opinion, in these two diseases, originally in the chyle.

That tuberculous matter is an elementary secretion from the blood, and not the product of any formative process of the secerning vessels, appears to me evident from its being found in so many hollow organs. Dr. Carswell has an observation to the point on this matter:—"a healthy secreting

surface, says this writer, may separate from the blood not only the materials of its own peculiar secretion, but also those of tuberculous matter. Such is, indeed, what takes place in the air-cells. The mucous secretion of their lining membrane accumulates where it is formed: but it is not pure mucus; it contains a quantity of tuberculous matter mixed up with it, which after a certain time is separated, and generally appears in the form of a dull yellow, opaque point, occupying the centre of a gray, semi-transparent, and somewhat inspissated mucus."*

The bulk of the facts in evidence on this interesting and important subject, appear, then, to render probable, if not fully establish, the following, as the manner in which tubercular matter is originally formed and deposited:—it would seem that, by a diathetic peculiarity of the function of chylification, which may be either hereditary, or induced in the digestive system by a concurrence of morbid influences, a matter is generated which, on entering the blood, does not assimilate with this fluid, but exists in the circulation as an extraneous body, and that, by a process which has many analogies, both in the healthy and morbid physiology of the living system (the process which cleanses the blood of impurities, by throwing them out of it), it is separated by the secreting vessels some-

* Morbid Anatomy.

times into the cells of the cellular membrane of organs, and there concretes into what we call "tuberculous matter," or into the open tubes and cavities they may contain; at other times, so strong, it would appear, are its tendencies spontaneously to separate itself from the chyle in the lacteals, and even from the blood itself, that it is found in the vessels of both.

I once met with a well-marked case of the expectoration of a transparent gelatiniform matter in a patient affected with all the symptoms of incipient consumption. He had a frequent short cough, tightness and pain in the chest, and difficulty of breathing. The sputa was always streaked with blood on the accession of a fresh cold, to which he was exceedingly liable; and there were distinctly discernible in the thin, frothy phlegm that he expectorated, small round globules, of a pearly-coloured transparent jelly. He had, besides, all the external characters of a strumous constitution: his skin was thin, and exceedingly fair; his eyes were light, and had a dull and watery lustre; and his hair was red. Was the gelatinous-looking substance he expectorated, the rudimentary matter of tubercles that had been secreted into the bronchi and bronchial cells? This patient was an officer in his majesty's service, and, with these symptoms upon him, went out to a foreign station between the tropics, where he recovered.

Before closing these remarks, we have only one more to make on tuberculous formations; and that is, that while the great influence of an unhealthy condition of the blood in the production of tubercles must be fully admitted, its agency, in this respect, is, nevertheless, to be accepted purely in a secondary sense. We are to recollect, that sanguification, itself, is a process intimately associated with the integrity and healthiness of vascular action, and the fact, if further considered and followed out, will lead us back to the original proposition with which we started — the influence of the constitution of the capillary system in the production of tubercles. It is the juices, we all know, secreted by the chylopoietic organs, that effectuate perfect and healthy digestion. The qualities of the blood, therefore, if traced to their source, are entirely derivable from vascular action; for, since all secretion is performed by the capillary vessels, it is evident that the first essential operation in the process of sanguification, which is digestion, is entirely dependant on the nature of their action; and, on the other hand, the state of purity of the blood no less depends upon the intregrity of another capillary function — we mean, the due action of the exhalents. Candour, notwithstanding, obliges us, in conclusion, to acknowledge that, with all the attention we may have given to the investigation of the subject, and however feasible the foregoing exposition of the phe-

nomena may seem, the question of the primary formation of tubercles is still involved in very great difficulty, doubt, and obscurity.

The matter first expectorated, in consumption, consists, as has already been observed, simply of phlegm; but when the tuberculous depositions soften and burst into the air-tubes, this matter appears mixed with the sputa in the form of a whitish curd.

Tubercles do not soften through the operation of any imflammatory action set up within themselves; and, therefore, the process bears no analogy with that which produces the dissolution of cancerous tumours of an encephaloid nature. There is no previous formation of a network of arterial capillaries, under whose exalted action, according to the interesting observations of MM. Recamier and Berard, this operation is accomplished; neither do I believe it to ensue from any spontaneous change taking place in the composition of the matter itself; on the contrary, I am disposed to believe, with Dr. Carswell, that it arises from the imbibition of fluid matter, as serosity, pus, blood, &c. furnished by the surrounding tissues.

When the tubercles are dissolved in this manner, and thus come to be expectorated by coughing, it not unfrequently happens that streaks of blood, proceeding either from a ruptured vessel, or exulcerated surface, appear in the sputa; and if the vessel from which it flows be larger, the quantity

of blood which is spit up is sometimes considerable.

Softened tuberculous matter, though often puriform, is not purulent; and any pus that is mixed with it, proceeds from the ulcerated surface surrounding it, or from some cavity already left in the lungs after the evacuation of a mass of tuberculous matter that had previously undergone dissolution.

However, there is another source from which pus proceeds, especially in the latter stages of consumption, and that is, the trachea and the larynx. The quantity of matter produced by the softening of numerous tubercular masses is often very considerable, and by its constant flux into the air-tubes, it necessarily excites and keeps up a continual violent coughing. Now, the consequence of this frequently is, to produce inflammation, particularly in the wind-pipe and larynx, which, eventually ulcerating, from the severity and constancy of the cough, thus furnishes matter for expectoration of a purely purulent nature. The inflammation often extends still higher and affects the fauces and tongue; hence the latter, though moist at first, now assumes a deep red hue and becomes parched: a thrush, very commonly in this stage of the disease, breaks out on both; and as the small vesicles burst, they leave the surface of the tongue and throat ulcerated.

Deaths from consumption are most numerous between the ages of 20 and 30, and 30 and 40, the proportion being 23 out of 100 between these two periods: its frequency is not much diminished between 40 and 50, the proportion being 21; after which it decreases inversely with the age, and the same result holds good under 20. The period most fatal in children is from four to five.

With respect to the morbid appearances found after death, I shall but barely allude to them.

The lungs of those who die consumptive may be found in one of the three following states in regard to the developement of tubercles:—Firstly, In some very rare instances they have been observed to be disorganised by tubercles but yet in their incipient stage, that is, in the form of gelatine. In the second, which is much more usual, the tubercles have attained the period of crudity; none existing in the first stage. The third state is, likewise, very common, in which the tubercles are very advanced, ripe, softened, or even replaced by cavities; while in other portions, the lung is studded with tubercles in every intermediate degree of developement between that in which they first become perceptible and their successive progression to full maturity. The substance of the lung surrounding a tubercular excavation is usually found indurated. Marks or scars of the healing of a tubercular excavation are sometimes observed in the lungs, establishing the

fact that occasionally the cavity heals up after the tuberculous matter is expectorated.* It is the upper portion of the lungs that is most liable to this morbid deposition; and Louis makes the remark, that whenever tubercles are found in other organs, they invariably exist at the same time in the lungs.†

We have already noticed the ulcerations to which the wind-pipe and organ of voice are subject; but, whether from sympathy of tissue or otherwise, ulcerations are likewise frequently found in the

* Dr. Hope has shewn in his work of Morbid Anatomy, that tubercular cavities may heal in one of the three following ways,—Firstly, by the interior walls of the excavation getting covered by a healthy membrane of a mixed fibro-cellular or fibro-cartilaginous nature. Secondly, by the agglutination of the sides of the cavity, as is shewn, at times, by a fibro-cellular line in which the air-tubes are found to terminate abruptly; and, Thirdly, by a gradual thickening of the parietes, filling up the excavation with a fibro-cartilaginous substance.

† Laennec gives a schedule of the organs and parts most subject to tubercular deposits, in the following decreasing order of succession:

The Lungs,
Bronchic Glands,
Mediastinal Glands,
Glandulæ Concatenatæ,
Mesenteric Glands,
All the other Conglobate Glands,
Liver,
Prostate Gland,
Peritonæum,
Pleura, and, least of all, the
Voluntary Muscles.

mucous lining of the intestines. Indeed, it is to this determination of the morbid action that the looseness occurring in consumption is to be traced, a symptom which invariably indicates inflammation of this membrane or its glands in the first stage of the disease, and ulceration of them in the latter. The last is very frequently met with in the large intestines, and almost always at the ileo-colic valve.

Of the Diagnosis or Manner of Distinguishing the Disease.

One of the most lamentable of the circumstances connected with consumption, is the impossibility of distinguishing by any of the means hitherto discovered, the actual existence of tubercles in the lungs at a period when such a knowledge would be of the most importance—I mean at their first formation. Both by the resonance yielded on percussing the chest,* and the signs obtained by stethoscopy, we are enabled to recognise, with a satisfactory degree of certainty, the middle and latter stages of the malady; but, un-

* The cavities of the lungs, in a healthy state, are always more or less distended with air; when the chest, therefore, is gently tapped with the ends of the fingers, a sound is rendered similar, or rather analagous to that obtained on striking a hollow vessel, as a barrel. This has been called *percussion*, and was first conceived and practised as a means of ascertaining the state of the lungs by Avenbrugger, and afterwards perfected by Corvisart.

fortunately, it is not the same with tubercles in a nascent state, for the entire texture of the lungs may be studded with thousands without the most delicate *auscultation* being capable of discovering their existence.* It is, therefore, only candid to declare that, as yet, it is impossible to recognise consumption at its commencement.

Even in its more advanced stages, tubercular consumption is, in certain instances, difficult to be distinguished from chronic inflammation affecting the air-tubes, attended with dilatation. Many of the leading symptoms are common to both: purulent matter is expectorated, there is great wasting of the body, violent cough, much difficulty of breathing, and profuse night perspirations. If we appeal to the stethoscope to decide our doubts, we are often not much enlightened by the information it affords; for the sounds rendered by the breathing and voice, both in dilatations of the air-tubes, and when tubercular excavations exist, are so similar, that we are unable to determine from which they proceed. In such doubtful circumstances, "it is only by attention to the progress of the disease," as Dr. Williams has judiciously observed, "that it can be discovered that it is not phthisical."

The signs by which we ascertain the precise

* Auscultation is the listening to the sounds made in breathing, through the hollow cylinder called the stethoscope.

nature of the diseases of the lungs, are the symptoms, the sounds rendered on percussing the chest, and those of respiration and the voice made audible through the medium of the stethoscope. We have enumerated at length the symptoms of consumption: it remains for us to point out the *physical signs* of the disease. When the tubercles are so small as not to encroach upon the air-cells, no alteration takes place in the natural respiratory murmur, and on percussing the chest the lungs retain their resonance; but as soon as the tubercles enlarge and consolidate, both the murmur and resonance are destroyed, *bronchophony** is heard at the arm-pits and under the collar-bones, and bronchial respiration.

In the second stage of the disease, that is, when the softening of the tubercles takes place, sounds are heard which differ somewhat in proportion as the tubercles become more dissolved: at first it is crepitant, then gurgling and mucous.

In the last stage, or when the matter has found its way into the air-tubes and is expectorated, an ulcerous excavation is formed in the lungs, and the cough and respiration become cavernous,† and *pectoriloquy* is heard,‡ but if the

* Bronchophony is the resonance of the voice heard in the chest on speaking.

† Cavernous respiration is similar in sound to that heard on applying the stethoscope to the anterior part of the neck.

‡ Pectoriloquy is the sound of the voice heard as if issuing

matter be not all evacuated from the cavity, its presence combines the mucous rattle with the cavernous resonance. If the excavation be near the surface of lungs, then the stethoscope gives what has been called the *blowing respiration.**

Of the Causes of Consumption.

The causes of consumption may be comprehended under three heads :—

Firstly, the Inherent; secondly, the Predisposing; and, lastly, the Exciting Causes.

By the first, we mean that which is hereditary, or transmitted to us at conception by one or other of our parents.

The analogy of all nature bears out the undeviating constancy of the fact, and we may take in the range of the whole of the animated creation without finding one general exception to the rule, that "*similis similem parit.*" The hereditary transmission, therefore, of *a diseased tendency,* is the natural consequence of the hereditary transmission of a morbid conformation; and if this have its seat, in particular instances, in the extreme vessels

from a cavity completely emptied; but to be diagnostic it must exist only on one side, for if heard on both, the sign becomes doubtful, since the greater probability is that it proceeds from dilated air-tubes.

* In the blowing respiration, the breath of the patient seems to *blow* into the ear of the auscultator in expiration, and to draw it out again in inspiration.

of the lungs, we thus have the *apparatus* of a peculiar diseased action ready prepared for any casualty that may set it in operation. This plain exposition of the nature and origin of hereditary disease shews how much more extensive inherent, or, more correctly speaking, innate, morbid tendencies, are, than what is ordinarily acknowledged or understood by the term "hereditary." Cataract is known to be capable of descending through several generations; so are calculous disorders: several cutaneous diseases, cancer, mania, a tendency to apoplexy, gout, water in the chest, and tonsillitis, run in families; hysteria and hypochondriasis are often transmitted diseases; — all of which, and many more that might be enumerated, originate from different peculiarities of congenital conformation, and are, therefore, strictly diseases of inheritance: indeed, there are few that may not be made to become so, more or less.

If no casualty intervenes during life, powerful enough to excite into activity the original unsound conformation of a part, then it happens, that the person escapes the disease that perhaps caused the death of his father;* but as he, if he have children, transmits the same structure to his progeny which he himself inherited, we thus see how the latter

* This law is often further interrupted in its course and tendeney by the progeny having the conformation, or constitution, as it is more familiarly called, of the parent, free from any particular hereditary taint.

come to be obnoxious to that very disease from which their parent escaped, only through a fortuitous good-luck. The term "*germs* of disease," when applied to the constitution, signifies therefore no more than inherent structure, in most instances; and hence, in using the expression, they (the germs) may more properly be said to be dormant than latent in the constitution.

How far this peculiar morbid structure, which tends to the formation of tubercles, can be induced by previous disease, remains for further investigation to determine. The question, at the outset, is embarrassed by another, that requires to be previously answered; namely, Whether or no, when the inherent tendency to tubercular formation is slight, the morbid disposition be merely favoured and strengthened, not actually induced, by the preceding disease?

With regard to the predisposing causes of consumption, they all ultimately resolve themselves into whatever debilitates the body generally, or the lungs in particular; and they appear to operate entirely by favouring the deposition and developement of the rudiments of tubercles. Hence, excesses of all sorts, previous diseases that injure the constitution, poor and unwholesome diet, deteriorating the quality of the blood, &c., are common causes of consumption. The disease is more frequent among women than men; and repeated child-bearing and suckling can often be traced as

giving rise to it. Indications of the scrofulous habit are usually mentioned as a predisposing cause of consumption; but this is, in fact, but another term for the tuberculous diathesis. It is nothing but tubercular matter that is deposited in the glands of the neck, which causes them to swell and suppurate; and the same may be said of struma, in whatever situation or form it may appear.

Climate appears distinctly to exert a predisposing influence on the prevalence of consumption, as is obvious from the greater frequency of its occurrence in the central parts of the temperate zone than in either extreme, north or south: it is comparatively rare in the polar regions, and also between the tropics.

Humidity has been imputed as a predisposing cause of phthisis, but without good reason. It is not a common disease in Holland, where the soil is marshy, and where canals abound; neither is it remarked to prevail more in the fenny than on the high lands of Lincolnshire; neither, as I have just observed, is it of frequent occurrence between the tropics, where, conjoined with great heat, there is always much humidity: it is also ascertained to be less common on the coasts than inland. Indeed, sheltered places by the sea-shore, in the southern parts of England, are often those purposely resorted to by the consumptive invalid. We are, therefore, to reject the idea that humidity

exerts any predisposing influence in producing consumption.

Among the exciting causes are to be enumerated catarrh, and the causes producing catarrh; but both the one and the other operate only indirectly. Of the latter of these causes, there can be no question of their indirect nature — such as wet clothes, damp beds, sudden and severe changes in the weather, &c.; and with respect to their consequence, or catarrh, I am disposed to regard it in the same light. It is not during the active inflammatory stage of this disease, in my opinion, that the tubercular rudiment is generated; but in the state of capillary debility and congestion that afterwards ensues. There are various facts which demonstrate that simple inflammation has no special power of producing the formation of tubercles, since many people are affected with catarrh, attended with severe cough, almost every winter, and yet never become consumptive. Again, the tissue of the lungs immediately surrounding incipient tubercles shews none of the vestiges of acute inflammation; and when, in some few rare exceptions, we happen to find the neighbouring substance of the lung inflamed, it is always at a more advanced period of the disease, and as a consequence induced by the tubercles themselves, or the long continuance and violence of the attendant cough.

The great liability of the consumptive to catch

cold is mainly attributed, in the first instance, to the inordinate sensibility of the lungs, proceeding from their hereditary morbid organisation; and we can readily conceive that this excessive degree of susceptibility will not be lessened, but the contrary, as soon as tubercular depositions take place. These two circumstances, I apprehend, will be quite sufficient to explain why repeated colds should so commonly precede the first cognisable signs of consumption.

We have already noticed the fact, that certain periods of life are more liable to consumption than others; the greatest mortality occurring between the ages of 20 and 30, and 30 and 40. Under the first age, the body has not attained the period of its full size and stature; and, until then, the capillary system appears to be endowed with an increased degree of activity: but, as soon as the growth of the body is completed, the extreme vessels lose this extraordinary portion of their power, and, sinking down to that which is natural to their structure, they become liable to a state of hæmostasis, if that be naturally feeble. The precise period when these vessels subside into the comparative state of inertia we speak of, necessarily varies with the difference of constitution of individuals; and, at the same time, the accidents capable of setting in motion the elements of the morbid action, are not less uncertain in the time of their occurrence, and, therefore, render the period of

its appearance equally indefinite. These two circumstances of constitution and casualty are perfectly competent, we conceive, to account for the period of the greatest mortality, taking in a range of twenty years; that is, from 20 to 40. After the latter age, the frequency of the disease diminishes in a ratio with the years. Indeed, an advanced period of life is itself to be taken as presumptive evidence of no tubercular disposition existing in the constitution; since the chances are, that, long before this, some casualty or circumstance would have called it into action.

Of the Treatment of Consumption.

In the observations which follow under this head, we do not profess to put forth any novel plans of treatment: our aim will rather be to point out the therapeutic means which have been observed to be most beneficial, based on, and sustained by, the views we have taken of the original nature and primary cause of the disease.

We unfortunately possess no certain means, as I have before observed, of ascertaining the existence of tubercles in the lungs, when they are in their rudimental state; and the fact cannot be imputed to medical men as a fault, seeing they declare themselves by no symptom by which their existence can be recognised. Their semi-liquid consistence and minute size (for it requires a mi-

croscope to detect them) offer no obstruction, in this state, to the functions of the organ they inhabit: the breathing is free, and there is no cough. But when tubercles advance a stage further—when they enlarge, and get more solid, then it is that they manifest their presence by trespassing on the hollow structure of the lungs, and deranging their natural functions, that of expanding freely to the ingress of the air inhaled. When, therefore, we observe in any one of a family prone to consumption, the slightest symptoms indicating an affection of the lungs, our imperative duty is to meet them on their first approach, and at once oppose their further progress, if possible; for against such an insidious and fatal disease we never can be too watchful, or too soon on the alert.

The treatment of consumption hence obviously divides itself into two periods — that proper to the disease before the softening of the tubercles, and that applicable to it when softening has taken place. With regard to preventive means, the observations I have to make on this head will be best considered as we proceed, and will be found incorporated in the sequel.

When consumption was regarded as a pure inflammatory complaint at its commencement, which it was when less perfectly understood than at present, physicians were in the habit of recommending and practising repeated small bleedings.

We find this was the treatment adopted in the times of Dover and Morton: the first recommending it in his *Ancient Physician's Legacy to his Countrymen;* the second, in his *Phthisisologia:* but the injurious results of this practice caused it to be abandoned long before the *rationale* explanatory of its impropriety was understood. Bleeding, in incipient consumption, may remove the congestion of the capillaries for the moment, and thus afford temporary relief; but, by directly increasing debility, the congestion soon returns, and in a greater degree than before.

When the hydrocyanic acid was first introduced into practice, it was much lauded by certain writers for its efficacy in consumption; but more faithful experience has shewn how much its virtues in this disease were over-rated. This fact affords another beautiful illustration of the dependence upon, and connexion between, therapeutics and physiology, both natural and morbid. From the ascertained efficacy of hydrocyanic acid in some of the diseases of the lungs, it was inferred that it would prove equally so in consumption: but, though this acid possesses the property of lessening sensibility and irritability, the power appears confined in its operation to the mucous tissues, diminishing their morbid sensibilities, as well as the irritability of the muscular fasciculi with which they are, for the most part, closely conjoined. Hence, this medicine has been found exceedingly

serviceable in numerous asthmatic cases, hooping-cough, *tracheal* phthisis, and chronic bronchitis; all of which are affections of, or intimately connected with, the mucous tissues: but, as I just observed, it is a medicine exerting no such efficacy in consumption. And why? Because the mucous tissue of the lungs is not the original seat of the disease.* But there is another reason for this, independent of the one just given; and that is, that hydrocyanic acid possesses no power of controlling the force of the heart, and, therefore, exerts no direct influence on any part of the circulatory system. This fact is fully established by an experiment of Sir Benjamin Brodie's. This distinguished surgeon and experimental physiologist killed a cat, by dropping a single minim of the oil of bitter almonds on its tongue. On opening the chest, after breathing had entirely ceased, *the heart was seen still pulsating*, and circulating dark-coloured blood.

Emetics have been employed in the early stage of consumption, and as one of the occasional and rare means of curing this disease before the break-

* It is on similar principles, I conceive, that hydrocyanic acid often proves so beneficial in dyspepsia, pyrosis, chronic dysentery, and excessive irritability of the womb; diseases of mucous tissues in contact with muscular fasciculi; and likewise in abating the irritation and painful itchiness accompanying impetigo, prurigo, and psoriasis, diseases involving in their action the *mucous* tissues of the skin.

ing down and expectoration of the tuberculous matter, we know of none, contributing to this end, on which more reliance can be placed.

The great object of our treatment in the first period of consumption, ought to have almost exclusive reference to the source of the diseased action. Therefore, to relieve the congestion in the lungs, by exciting into general activity the capillary system of blood-vessels, without exciting too much the vascular system at large, should be the main ultimate purpose, according to the views we have taken of the disease, of all our remedial measures. Now, among the means most immediate and certain, though, perhaps, not the most permanent, of accomplishing this object, is the operation of an emetic. But let us take a more deliberate review of the therapeutic operation of emetics in consumption, than by a bare allusion to it.

One of the first and most obvious effects of vomiting, is the concussion the action gives to the whole frame. It is from the universality of this concussion, and the tendency it has to equalise the blood's distribution thereby, that emetics are often found so beneficial in local stagnations and determinations of this fluid; and it is upon this principle that we partly explain the benefit accruing from their use in cases of incipient consumption.

Emetics have likewise a powerful influence in promoting absorption, This is an effect resulting from their action independent of that of the general

excitement they occasion; and the *rationale* of it appears to be this.—After the casual contents of the stomach have been evacuated, the effect of an emetic on this organ is to cause a sudden and considerable increase in the quantity of the ordinary secretions poured into it, and, in consequence of this sudden requisition, the absorbent vessels, it would appear, are put in demand to supply it. It is in this way, that we account for the diminution and final disappearance both of solid and liquid tumours from different parts of the body under the repeated operation of emetics; and as another analogous fact, demonstrative of this principle, we may cite the rapid absorption of fat which takes place from all parts of the body in cholera, occasioned by the demand made on the absorbent system by the vast evacuations that occur in this disease both from the stomach and bowels.

Another beneficial effect resulting from the operation of emetics is, that, on vomiting ceasing, exhalation is found going on more freely: hence, those exhalent vessels which open into the air-cells of the lungs, in participating in common of this effect, relieve by their action the congestion of blood in the extreme pulmonary arteries and veins, by draining off a portion of the fluid they contain.

Emetics, it may lastly be observed, if gentle in their operation, give strength to the whole of the digestive organs: hence, digestion is often vigorous after vomiting, and in a disease wherein the effect

of diet is so influential as in consumption, we at once see the advantage likely to accrue from any thing rendering the food as little an irritant as possible, an effect which the process of digestion itself remedies by removing it,—that is, by digesting it.

Emetics which act quickly and without producing much previous nausea are those to be preferred (14, 15). The effect of nausea is to diminish, in a strongly marked manner, the action of the heart and the general force of the circulation. Now, however desirable this result may be in all those affections wherein the inordinate strength of the circulation forms a leading and destructive feature of the disease, it is an object we have no reason for wishing to accomplish in consumption, seeing we can attain the stimulation which the action of vomiting distributes over the whole capillary system without this depressing precursor. The state of stimulation ensuing from vomiting is evinced externally by the redness of the skin, and by the perspiration which sensibly bedews the head, neck and chest in particular, as

(14) ℞ Sulph. Zinci,
Pulv. Ipecac. āā gr. v. M.
Sit pulvis emeticus.

(15) ℞ Sulph. Cupri,
Pulv. Ipecac. āā gr. v. M.
If these operate freely of themselves, it is not desirable to give much drink to provoke any continuance of their action.

well as by the feeling of glow which pervades the entire surface of the body.

The emetic may be repeated every second or third day for two or three times, and its use then intermitted for a week or ten days. But it is necessary to bear in mind, that there must be no pain in the chest present when we prescribe this practice, for as this, for the most part, indicates active inflammation, the concussion of vomiting would only aggravate it.

In the incipient stage of consumption, sponging the chest every morning with pyroligneous acid and water is of great service (16). The parts should afterwards be rubbed perfectly dry with a coarse towel, so that the friction, as well as the stimulus of the lotion, may excite the activity of the minute vessels on the outer surface of the chest.

Another powerful means of equalising the circulation, and thus relieving local stagnations of blood, is that of promoting insensible perspiration. Among the medicines prescribed with this *modus agendi* for their object, the tartarised antimony, and sarsaparilla merit a preference. That they do promote insensible perspiration is undoubted, but their manner of effecting it is not

(16) ℞ Acidi pyrolignei,
Spt. Vini tenuioris, āā ℥i.
Aquæ font. ℥vi. M.

Fiat lotio.

quite so obvious. In the present state of our knowledge it is a matter which we cannot discuss satisfactorily, since it embraces the yet undetermined subject of the special power of the extreme arteries to perform a part of the circulation separate from the heart; it involves the question, how far an obstruction to the circulation in a particular part, does or can affect the whole capillary system? and it no less includes the yet obscure subject of the dependence which the evolution of heat on the surface has upon the electrical changes which are supposed to take place at the point where the blood alters from an arterial to a venous character. These are the complicated considerations upon which depend the solution of the manner in which the exhalents become liberated through the medicinal influence of any substance acting as a diaphoretic. However, of the most important fact connected with the subject, there is no question, viz. the release which is brought to the blood congested in any part of the capillary system through the operation of sensible and insensible perspiration.

With the superior advantages of treating consumption on this plan, we were early impressed, from observing more recoveries under it, while employed during the late war at one of the largest hospitals in England (Haslar), than we have ever done since; and more lately, Dr. Giovanni di Vittis, physician of the Military Hospital at Capua,

bears similar testimony to its efficacy. This respectable physician states, in the "Annali Univ. di Medicina, Dec. 1832," that between the 1st of May, 1828 and the 28th of January, 1832, 47 patients affected with consumption in the first stage, 102 in the second, and 27 in the third, or last stage, had left the hospital perfectly cured by taking a tablespoonful of the following mixture morning and evening:—

℞ Antim. Tart. gr. iij.
Syr. Caryoph. ℥i.
Decocti Malvæ, ℥v. Solve et M.

Rice diet was allowed, and barley-water given for drink. If vomiting did not ensue, the dose was repeated, provided the patient was not too much reduced.

The practice of di Vittis, we perceive, is to provoke vomiting as well as promote diaphoresis. At Haslar, our measures were confined to the latter, giving the antimony as below (17).

Next in efficacy to tartarised antimony as a mild diaphoretic, is sarsaparilla, and it is often judicious practice to combine both it and the antimony together. Sarsaparilla by itself creates appetite as well as promotes insensible perspiration,

(17) ℞ Antim. Tart. gr. j.
Syr. Tolut. ℥j.
Aquæ font. ℥v. M. et solve.
Sumat æger cochl. ampla duo 4tâ quâque horâ.

and is especially applicable when we have reason to think our patient convalescent.

It not unfrequently happens, particularly when the disease advances unchecked by any of the means employed, and the tubercles increase both in size and number, that symptoms of inflammatory irritation arise requiring some immediate measures to subdue, or, at least, abate, them. We have already expressed the great necessity for caution in having recourse to bleeding in every stage of this disease; but if the patient be tolerably strong, and the pulse and other symptoms indicate an acute degree of action, we will be justified in resorting to leech-bleeding. Blisters have been employed under the same circumstances, but the judicious observation of Dr. Williams, that "blisters frequently rather add to the irritation than allay it," accords with our own experience in this matter, and that the counter-irritants which produce pustular eruptions are to be preferred. A sedative pill, compounded of conium or hyoscyamus with camphor and a minute portion of tartarised antimony, as prescribed below, may likewise be taken night and morning with advantage (18).

(18) ℞ Extr. Conii
vel Hyoseyami, ʒj.
Camphoræ, gr. x.
Antim. Tart. gr. i.
Contunde et divide in pilulis xx.
Sig. i vel ij nocte et i mane capiendum.

No subject connected with consumption has occupied more attention than that of climate; and, allied so closely as it is with cuticular and pulmonary transpiration, we cannot better introduce it for review than when treating of matters embracing this consideration. The marked influence which climate has in the developement of the tubercular diathesis, and how much more this morbid tendency prevails in one zone than another, has already been noticed, and the fact would seem to shew that neither heat nor cold, simply, even though extreme, is sufficient to cause the production of tubercles, *provided neither be liable to sudden and frequent vicissitudes.* It is this last circumstance, it appears to us, which makes the influential difference between the middle part of the temperate zone, in which consumption is a prevalent disease, and the arctic and torrid zones, in which the disease is comparatively rare.

We have also pointed out in what manner these vicissitudes act on the capillary system of the blood-vessels, and both facts and reasonings have already been adduced to shew how much this department of the circulation is concerned, both directly and indirectly, in the formation of tubercles. Now, the principal object of change of climate, as a remedy in consumption, is to avoid those sudden variations of the atmosphere —variations which are so active, not merely in the primary production, but also in the increase

and multiplication of tubercles afterwards, for I may here repeat, that the disease we call consumption is nothing but a tissue of symptoms developed by tubercles, from their first recognisable existence, when they begin to interfere with, and derange the function of breathing, to their dissolution within the lungs, and progressive expulsion in this state in the form of expectoration. In these few words is contained the whole pathological definition of consumption.

Several parts of Europe, particularly the south of France and Italy, have obtained repute as affording protecting asylums against the assaults of this fatal disease; but we regret being compelled to say, after having visited them all, expressly for the purpose of examining into the fact, that the numberless *memento moris* we met with in the way, shewed how little the character given them was to be relied upon.* Montpellier, once so much resorted to, is subject to great and sudden changes of temperature. The town stands on a hill, and when the north-east wind, or "*bise*," as it is called, blows, it is more chilling and cutting than even that in England. The same observation applies to Marseilles and Nice, though, perhaps, not quite so forcibly. The wind, when it comes from this direction, blowing over the snows and

* For a fuller account of the medical topography of Italy, the author refers the invalid to a "Pedestrian Tour," made by him through that country, published a short time since.

ice which cap the Savoy Alps, gets chilled without becoming moist, and when the body is exposed to it, it literally pierces to the bone. It is this same wind, which the Tuscans descriptively call *Tramontana,* that makes Florence also objectionable as a residence for the consumptive; fogs likewise prevail in autumn and spring, and in winter the air is cold and damp from its vicinity to the Apennines. At Naples, again, besides the *Tramontana,* which blows occasionally, there is another source of irritation more pernicious still to the lungs, because more direct and continuous in its operation, —we mean the fumes of sulphur, sal ammoniac, and choke-damp, with which the volcanic soil all around Naples is constantly impregnating the atmosphere. It is manifest that air imbued with matters so acrid, cannot fail, when respired, to aggravate all diseases of the lungs, and hence we find consumption a very prevailing disease even among the Neapolitans. According to Dr. Ruggiero, deaths from consumption form a fifth part of the bills of mortality in Naples. The impurity of the atmosphere is ever sensible to the nostrils; for the air never has that sweet refreshing aroma which makes an English spring so grateful and fragrant.*

* To shew the great variations to which the climate of Naples is subject, I extracted the following statement from the "Giornale delle Due Sicilie," for October, 1835, reducing the degrees of Reaumur's thermometer into those of Fahrenheit:—

The Neapolitans firmly believe in the infectious nature of consumption, and the state authorities, it would appear, are of the same persuasion, for when a person affected with this disease dies, all the furniture of the apartments the patient occupied is ordered to be burned. This circumstance adds to the other disadvantages of selecting Naples as a residence for this complaint, for people are very naturally averse to receive a lodger who is so likely to occasion so great an inconvenience.

Many undeniable facts countenance the opinion that consumption does possess an infectious power, though certainly not in the ordinary sense of the word. The breath, we know, of a consumptive person is hot, acrid, and, therefore, irritating; indeed, this is common to many inflammatory affections of the lungs. The breath in a common catarrh is hot and acrid, causing instant coughing in the person inhaling it. Now, if this be its common nature, we cannot well altogether deny the influence of the breath of one consumptive in exciting the same disease in another, who already has its rudiments formed within him. Granting

"On the 9th of the month, the thermometer stood at 79½°.

"On the 16th, it had fallen to 47½°.

"On the 18th, to 39°, when the summit of Vesuvius was sprinkled with snow, and the mountains of Anella completely covered.

"On the 22d, it had again risen to 64½°, thus demonstrating a difference of 40° of temperature in the first nine days, and of 25½° in the succeeding four."

the acrid nature of the breath to be capable of producing inflammation of the mucous lining of the bronchi, it is therefore not so improbable but that the air of an apartment strongly impregnated with the acrid respiration of a consumptive person is likewise capable, by setting up the same morbid action, of favouring and accelerating the developement of any tuberculous rudiments that may exist in the lungs of another, if inhaled for any length of time. In this way, and to this extent, we may safely admit, I conceive, the infectious property that is so generally ascribed to phthisis by the Neapolitans.

With respect to the climate of Rome, although the soil on which this city stands be also volcanic, with the exception of the quarter Trastevere, it yet bears no resemblance to that of Naples in relation to the gaseous emanations it gives out—the soil around Naples is still in pseudo-volcanic activity, whereas that of Rome is long ago extinct, as regards its volcanic character, and the emanations proceeding from it are those of corruption, not combustion. Hence the operation of the latter is rather deleterious than irritating, generating those pestilential fevers which annually devastated this celebrated city. In respect to its fitness as a residence for the consumptive invalid, we doubt it much, for it is difficult to conceive that any place, beset with an agency noxious enough to beget an endemic, can, under any cir-

cumstances, prove a haven of health for the diseased. This is the grand drawback; for, otherwise, the climate of Rome is comparatively steady and mild in winter. On the whole, Pisa, perhaps, may be considered the most eligible station in Italy for the consumptive invalid to fix himself, although even its topography is exposed to many grave objections. Viewing the flat country all around Pisa, extending from the heights behind it, and spreading to the sea, it appears manifest that the greater part must have been gained from the retreat of the Mediterranean. Even now, deep ditches towards Leghorn conduct the waters to the ocean; and the prevailing diseases of the country shew its damp and marshy nature. Notwithstanding the authority of a late intelligent traveller (Mr. Mathews), the opinion he gives of the climate of Pisa as a fit residence for the consumptive, must be taken with considerable reservation. There are forms, certainly, of this disease, which sometimes yield under the influence of a moist and bland atmosphere. The coast of Devon founds its claim to preference and selection in our own country on such qualities. But there are other forms of this fatal malady, which, instead of being benefited by a climate of a humid character, become much aggravated by its increasing the languor and debility, and augmenting the expectoration, at the same time that the hectic perspirations become more colliquative and pro-

fuse. To this latter species of consumption, the moist and relaxing atmosphere of Pisa acts like an exhausting pump, and the disease gallops to its goal. According to a census given by Dr. Palloni, an eminent physician at Leghorn, one in five of the native inhabitants out of a population of 75,000, die of consumption — a proportion larger even than in England. But of all the places on the Continent with whose topography we are acquainted, Hyeres, a place situated on the coast between Toulon and Luc, appears to comprise the most to recommend it — it is at a considerable distance from any mountainous district; it lies low, and it is near the sea, which tempers the intensity both of the heat and cold. Close in its vicinity we observed garden-peas in blossom in the very beginning of January.

Fatal experience, however, has abundantly proved that the most favoured climate is of little avail, saving in protracting life by mitigating the severity of the symptoms, when tubercles have advanced to the stage of dissolution; and that this advantage, small as it is, is more than counteracted by the loss of those conveniences and comforts which home and the kind solace and never-wearying attention of affection can bestow.

Under such discouraging circumstances, and with so many drawbacks, medical men now wisely prefer recommending their patients, particularly in the incipient stage of consumption, to the southern

shores of England; and when the disease is too far advanced for them to be removed with safety, an artificial climate is made at home, by a due regulation of the temperature of the patient's apartments. Regulated temperature, by means of fires, may be so managed as not to vitiate the air, or render the apartment close. This is not difficult to accomplish when the rooms are large and lofty, the windows properly fitted, and the door so situated as not to admit too large a draught. A double door is of advantage in this respect, and the patient's chair may be further protected by a skreen. A room, it may be observed, only becomes close by the fire not being kept brisk; for vivid combustion keeps the air of an apartment constantly changing, by consuming it; whereas, when a fire is kept low, its own smoke, from want of draught, finds its way into the room, instead of passing up the chimney: and hence, apartments, with chimneys that draw well, ought to be preferred.

Conducive, in like manner, to the great object we are to keep in view, that of promoting, and guarding against any check to, insensible perspiration, is a proper attention to clothing. The feverish heat, so liable to vex consumptive patients, is apt to cause them incautiously to relieve themselves from the feeling by clothing themselves too lightly, especially if the weather itself be warm; but it is evident that nothing can be more im-

prudent in so changeable a climate as ours, and in a disease attended with so much susceptibility as consumption.

Of a similar character, in its healthy and remedial effects, is excercise. "Exercise, as we have observed elsewhere,* if not too violent, strengthens the body, imparts tone to the powers of digestion, promotes all the secretions and excretions, gives vivacity to the circulation of the blood, and tends *to remove its morbid congestions.*" From the excessive excitability of the frame, exercise, in consumption, should be of the gentlest description; and sailing, swinging, and airings in an easy carriage, are of this kind. But, independent of the effects of the motion, there is another advantage derived from exercise that changes the scene, which is—the impetus given to thought by the sight of various objects, as they present themselves to interest the mind. This is one among the other good effects derived from travelling. The general character of the consumptive is a sensitive and contemplative turn of mind, prone to admire the beautiful, and susceptible of an exalted moral feeling, but with a deficiency, at the same time, of animal activity, and a feebleness of action in the vascular system, which, though easily stimulated, is as easily fatigued. Now, travelling offers ever-varying opportunities of calling forth the natural

* "Analysis of the Leamington Spa."

sensibilities of the mind, on the one hand; while the exercise consequent upon it, if not carried to excess, diffuses a healthy activity over the system at large, on the other. Our own country abounds in scenery and objects of the greatest beauty and interest, and these the invalid can visit without any domestic sacrifice—the friends dearest to him may be able to accompany him, and his home is never far distant.

Another consideration, of great moment, in the incipient stage of consumption, is the proper regulation of the diet. We have had repeated occasion to remark, that extreme susceptibility is characteristic of the consumptive habit; and keeping this circumstance in mind, together with the frequent necessity we have in the day, and every day, for food, we must at once see the importance of regimen in the treatment of consumption. Food taken into the stomach gives rise to a certain degree of vascular excitement in all constitutions, no matter how robust and healthy; and this excitement is, *cæteris paribus*, always the greater in proportion to the natural susceptibility to stimulation. No observance, therefore, requires more attention on the part of the patient than the regulation of his diet; nor is any negligence more hurtful to his recovery than the disregarding it.

Andral mentions some curious facts illustrative of the influence of particular foods on the tendency

to tubercular formations. He tells us that, among the carnivorous animals, tubercles are much more rare than among the herbivorous. It has likewise been remarked that the cows of Paris, which are constantly fed on dry hay, instead of feeding on fresh pasturage, are almost all attacked with tubercular consumption.* It is a disease common among the islanders of the South Pacific, among the inhabitants of La Haute Auvergne, Piemont, and Savoy, whose only diet is vegetables; and, from this circumstance, it has been inferred, that the nature of the food and the disease were consequently connected: but that vegetable diet, alone, is not sufficient to cause tubercles is satisfactorily proved, in our opinion, by the fact that consumption does not prevail among the Brahmins.

Long experience has established a preference to a milk diet, in consumption, over all other foods. Of all aliments, it is the least stimulating; and, during its use, the pulse becomes slow and full; the tone and contractility of the muscular fibre are diminished; and there is always a degree of languor and disinclination for exercise after partaking of it. Cabanis, one of the most philosophical of the modern French writers, observes—

* The monkey tribe are exceedingly liable, in this country, to die of consumption, which I am inclined to attribute to their inhaling so much their own exhalations in the close rooms in which they are kept.

"Fresh and pure milk acts upon the whole system as a sedative: it moderates the circulation of the fluids, and disposes the moving fibres to repose." Milk has been placed between the foods of the vegetable kingdom and the animal; but, though an animal product, chemical analysis has been able to discover the curious circumstance that there is no essential difference between it and the fruit of the almond tree (sweet almonds); the latter containing exactly the same constituents in a solid form, which compose the former in a fluid.* From the remotest antiquity, this aliment has been in favour with medical men. Oribasius tells us that "milk has two uses—one as a food, the other as a medicine;" and Trallian, who, of all the Greek writers, appears to have had the greatest faith in milk in diseases of the lungs, emphatically observes, in speaking of consumption—"Not any *medicine* or food is so suited to the patient, or of such service to him, as milk." Asses' milk, next to the milk of the female breast, has been found the easiest of digestion: it contains more sugar than cows' milk, and less cream and cheesy matter: it is, therefore, particularly well adapted to patients whose digestive organs are weak; but in using it, it is only prudent not to drink any

* Almost the only difference between them is, that milk made of almonds and water coneretes by heat alone; whereas natural milk requires rennet, or an acid, before heat will coagulate it.

thing acid too soon after having taken it, for this curdles the milk, by coagulating the albumen it contains.*

There are some interesting observations on the chemical constitution of milk by Dr. Prout, inserted by Dr. Elliotson in his philosophical work on "Human Physiology." "Observing that milk," says the former of these scientific physicians, "the only article actually furnished and intended by nature as food, was essentially composed of three ingredients, viz. saccharine, oily, and curdy or albuminous matter, I was, by degrees, led to the conclusion that all the alimentary matters employed by man and the more perfect animals, might, in fact, be reduced to the same three general heads.

"It remains to be proved whether animals can live on one of these families exclusively; but, at present, experiments are against this assumption; and the most probable view is, that a mixture of two, at least, if not all three, of the classes of nutriment is necessary. Thus, *milk* is a compound of this description; and almost all the gramineous and herbaceous matters, employed as

* Baynard mentions a curious fact concerning this, but, perhaps, in rather a ludicrous way:—"I remember," says this writer, "when I lived at Preston, in Lancashire, a man died with a cheese in his belly, by drinking new milk upon *sour* stale beer, which so frightened people from the use of milk, that all forsook it but the wiser calves!"

food, contain, at least, two of the three—the saccharine and glutinous, or albuminous.

"But it is in the artificial food of man that we see this great principle of mixture most strongly exemplified. He, dissatisfied with the productions spontaneously furnished by nature, culls from every source; and, by the power of his reason, or, rather, his instinct, forms, in every possible manner, and under every disguise, the same great alimentary compound. Thus, from the earliest times, instinct has taught him to add oil or butter to farinaceous substances, such as bread, which are naturally defective in this principle. Even in the utmost refinements of his luxury, and in his choicest delicacies, the same great principle is attended to, and his sugar and flour, his eggs and butter, in all their various forms and combinations, are nothing more nor less than disguised imitations of the great alimentary prototype, *milk*, as presented to him by nature." Witnessing, as we have just done, the truly admirable manner in which chemistry is capable of illustrating physiology, have we not abundant reason for admiring the justness of Cicero's beautiful observation, that "the arts which have reference to human life have a kind of alliance among themselves, and hold each other, as it were, by the hand."*

When we have cause to suspect that tubercles

* Oration for Archias, the poet.

are actually formed, it is almost needless to say that all exertion of the lungs in singing or speaking for any length of time should be sedulously avoided; and yet, though the necessity for this observance be so obvious, how usual is it to see clergymen, in particular, continuing to perform their sacred duties with lungs that reverberate only the echoes of the grave!

It is by a discriminating and judicious employment of the foregoing means, that we are to endeavour to remove, by absorption, the tuberculous matter already deposited, and by counteraction to prevent its further formation. The success occasionally met with, shews that it is possible to produce the re-absorption of this disorganising matter; nay, it is proved by the cicatrices or scars at times found in the lungs, that the cavity which contained the matter can heal up after it is all expectorated. It must, however, be acknowledged, that this desirable event is a rare one, as it too frequently happens that, when those morbid deposits, called tubercles, have undergone the process of softening, and having forced their way into the air tubes, come to be expectorated, all we can do is to palliate symptoms, and protract the period of life.

As soon as ulceration has taken place in the lungs, the preceding treatment requires considerable modification. The emetic plan is no longer applicable, except in the manner pursued by Di Vittis, of Capua, as mentioned in a

preceding page. Indeed, our persuasion is, that if any medicine is to cure the disease in this stage, we are mainly to rely on the extensive influence of minute doses of tartarised antimony on the extreme vessels at large, both as the best means of preventing further deposits, and the one most capable of stimulating the capillary arteries to fill up, or coalesce the sides of the excavation.

With the same object it is now requisite more than ever to still the cough. There are certain obvious circumstances rendering the cure of consumption doubly difficult, when it has advanced to the stage of ulceration. One is, that the sore is always in movement — now stretched on inspiration, now collapsed on expiration; and, if to these are added the continual rude shocks given to it by coughing, we cannot much wonder that it should not heal. Another circumstance unfavourable to the healing of ulcerations in the lungs is, that they are constantly exposed to the air and cold, and we cannot apply appropriate dressings to them. An ulcer, on an external part, if treated so, would be difficult to heal, even in a sound constitution; how much more so must it then be, when situated in the lax tissue of the lungs, and an unhealthy unhealing diathesis to contend with, besides?

To abate, therefore, the frequency and violence of the cough, we are to have recourse to sedatives.

Hemlock, hyoscyamus, extract of garden lettuce, and opium, in some of its forms, are those usually employed.

Hemlock, from its first introduction into practice, has established for itself a well-founded reputation of lessening the pain and irritation attendant on ulceration, wherever situated, and rendering the discharge from it less acrid. Its principal effect in consumption is to diminish the morbid irritability of the ulcerated lungs; and its sedative impression may be aided by conjoining it with some other medicine of similar property. (19)

The extract of garden lettuce was much used by the late Dr. A. Duncan in consumption, in doses of eight or ten grains; and it certainly acts as a mild and manageable narcotic. But nothing is so powerful, in checking the violence of the cough, as opium. The objections which apply to its use, in the early stages of the disease, are much lessened by the altered circumstances of the case: our object now is, not so much to produce absorption, which opium would prevent, as to abate the violence and frequency of the concussion given

(19) ℞ Extr. Conii,
—— Hyoscyami, āā ℈ii.
Pulv. Ipecac. gr. x.
Contunde simul optime, et divide in pil. xxiv.
Sig. Duæ nocte et una mane sumendum.

to the lungs by coughing; and its stimulant effect may be mitigated, by combining it with camphor, spiritus Mindereri, &c.; or it may be used endermicly, that is, by sprinkling it on a blistered surface. I have often seen a grain of the acetate of morphia, applied in this way over the pit of the stomach, procure a quiet night's rest, when the same substance, internally taken, had failed. The same result is frequently obtained when this drug is administered in the form of enema. The celebrated Dupuytren preferred, in many cases, this latter mode to all others, in the administration of opium, even when no idiosyncratic objection was present.

Digitalis was formerly, and is still, much used in consumptive cases, and frequently with much benefit. But we are to recollect what is the object we have in view, in order to prescribe it properly. When ulceration has taken place, there is always greater inflammatory excitement present in the lungs, than before the dissolution of the tubercles; the heart and larger arteries pulsate with greater force; and active inflammation is readily set up, both in the substance of the lungs, and in their membraneous envelope, the pleura. Now, when this runs high, and the patient is labouring under great difficulty of breathing, acute pain in the side, &c., the physician is placed in circumstances of great difficulty,—to decide whether the symptoms demand the actual loss of blood; or whether the

controlling power of digitalis over the circulation, assisted by derivatives applied to the surface, would suffice; for he is to recollect, before venturing on any such energetic treatment, that "there lies no writ of error in the grave." Whenever, therefore, an evident tendency to inflammation exists in the case, we are to resort to digitalis to keep it in check, and thus avoid — what necessity alone can oblige us ever to adopt in consumption — the actual abstraction of blood. The subjoined formula we have found useful. (20)

Sponging the body must not be employed in the stage of ulceration, lest it should excite the inflammation we have just spoken of; and a change to a warm climate, under the same circumstance, is worse than useless,— it is positively hurtful; for, generally speaking, consumptive patients die more speedily in hot countries, after ulceration has begun, than in England, where, by art, we can, if necessary, regulate the temperature so as to counteract the cold, without carrying it to an opposite extreme.

Issues between the shoulders have been recommended; but we are inclined to agree with Toma-

(20) ℞ Tinct. Digit.
Vini Sem. Colchici, āā ʒi.
Mucil. Acaciæ, ℥iii.
Syr. Aurant. ℥i.
Aquæ Font. ʒiv. M.
Sumat cochl. ampla duo quartâ quâque horâ.

sini and Rochoux, and think that, instead of good, we have seen them, on the contrary, oftener productive of harm; and, therefore, as a counter-irritant, pustulation, raised by tartar emetic ointment, is to be preferred.

With regard to the inhalation of iodine, and such like, in consumption, we have no confidence in the practice; and believe that, when these substances prove beneficial, it is purely in chronic thickenings of the mucous membrane of the air-tubes. Iodine has the power of stimulating the absorbents to increased action; but this, in the ulcerated stage of consumption, would only tend to enlarge, not lessen, the cavity of the ulceration.

There are certain symptoms occurring in the latter stage of consumption, which require immediate attention; and none more, from the great debility it induces, than the looseness that is apt to alternate with the night perspirations. Catechu and chalk are, perhaps, the best astringents we can employ; and the irritability of the intestines may be allayed by a small addition of the tincture of opium. (21)

(21) ℞ Cretæ ppt. ʒii.
Sacch. purif. ℥ss.
Tinct Catechu, ʒii.
—— Opii, ♏xxx.
Aquæ Cinnam. ℥ii.
—— font. ℥iv. M.
Capiat cochl. ampla duo post singulas sedes liquidas.

We must endeavour to check the profuse night perspirations, by sulphuric or nitric acid potions, and by diminishing the quantity of the bed-clothes; although the latter requires great caution, and ought, rather, to be done before the perspiration breaks out, than during its continuance. Against the thrush, which frequently infests the mouth in the latter periods of the disease, a little borax, rubbed up in confection of hips, may be used.

Few morbid phenomena are less understood than those of hectic fever. Some have thought that hectic arose in consumption, from the absorption of purulent matter into the circulation: but there is no proof of this, in the first place; and, in the second, we know that it is a frequent concomitant of other diseases, in which there is no suppuration going on. If we attentively scrutinise the nature and sequence of its characteristic symptoms, I apprehend we shall find them to be nothing but *morbidly exalted conditions of the natural phenomena that take place diurnally in health:* but this is not the proper place to demonstrate the fact.

The last and concluding observations we have to make, are a word or two on the diet of the patient in the latter stages of the disease. This requires to be of a more nourishing quality; for we have a purpose to sustain by it, which, in the early stages of the disease, was not of the urgent consequence it has now become, namely,

the supporting the sinking powers of the system, and the protraction, if not the security, of the patient's life against the exhausting effects of the disease. Jellies, soups, puddings, and such like, may, therefore, be allowed; and we have, at times, found malt liquor (porter) in moderate quantity, aid powerfully in sustaining the patient's strength.

CHAPTER III.

OF DRY CATARRH.

The branches into which the wind-pipe divides when it arrives at the lungs, are termed the *bronchi*, and when the membrane which lines them becomes the seat of inflammation, the disease is called *bronchitis*. But, in all the descriptions given of this disease there enters a considerable degree of confusion among medical writers, owing mainly, as it appears to us, to the want of correctness in locating the exact seat of the morbid action. It is to be recollected, that in the structure of the air-tubes there are more tissues than one: in referring, therefore, the inflammations affecting them exclusively to their mucous lining, we are likely oftentimes to be wrong. In this point of view, are we disposed to consider the pathological descriptions of dry catarrh given by most medical writers—a disease, in its pure state, bearing, as we shall immediately endeavour to shew, little or no resemblance to those inflammations of the *mucous* lining of the bronchi described at some length in a

preceding part of this work. Dry catarrh, when uncomplicated, is distinguished from all other affections of the lungs by two characteristic circumstances,—the noisy violence of the cough at its very commencement; and the little phlegm, notwithstanding, that is expectorated, not merely in the beginning of the disease, but throughout the whole course of it; for even in its decline and termination the expectoration never becomes copious. The violence of the cough causes the chest actually to ache from the severity of the concussion; more or less of tenderness and soreness, if not acute pain, in the chest always accompanies this affection, along with considerable difficulty of breathing, and what little expectoration is brought up at the termination of a violent fit of coughing is usually viscid and of a pearly appearance.

Dry catarrh is a disease which is often met with of long standing. The cough may almost be said to become habitual in some cases, since we have known it to last for twenty years. This circumstance is a proof of the little tendency the disease has to assail other structures; and it is sometimes surprising to observe how much emaciated the patient will become in consequence of the long continuance and severity of the disease, and how readily violent cough is excited by the slightest variations of temperature, such as going from one room into another, the opening of the door, undressing in going to bed, or quitting it to dress in the morning, and yet

that the inflammation should not extend into the substance of the lungs.

As no very great degree of fever accompanies this complaint, in its simple form, and as it affects the strength even less than an ordinary catarrh, it is very usual for people to neglect it in the beginning, and only to apply for medical advice when the disease has so firmly fixed itself, as to be removed by much greater attention than what they can, in many instances, be induced to bestow. The patient is in some business or occupation, perhaps, to which he conceives himself still well enough to attend; and by doing so, he gradually gets worse. He not unfrequently dismisses his physician before he is well; and, by and by, returns to him with every symptom aggravated, with the cough more violent and frequent, and the expectoration altered in its character: he is evidently much wasted in flesh; labouring, in fact, under what, perhaps, you took the precaution to predict would be the result of his neglect—*bronchial* consumption.

Now, the whole tenor of the symptoms, from their commencement to their issue, clearly shews that the mucous membrane is very little involved in the morbid phenomena. The disease, in reality, lodges deeper, and has its seat, if we mistake not, chiefly in the interstitial cellular tissue of the muscular fasciculi of the air-tubes. It is the irritation, excited by the inflammation, that provokes the

frequent cough; and the spasm among the muscular fasciculi, which it also gives rise to, increases the difficulty of breathing and sense of constriction produced by the tumefaction of the sides of the air-tubes—symptoms which, from their resemblance to those attendant on spasmodic asthma, have occasionally obtained for this affection the name of "Dry Asthma."

The alterations of structure which the disease induces are such as we might expect from the tissue affected. The mucous lining of the air-tubes often evinces no morbid change, excepting in appearing whiter than natural; or, when vestiges of inflammation shew themselves, they bear the character of chronic action, the increased redness being of a dark hue, the result of the congested state of the venous capillaries. The principal seat of the disorganisation is found in the structure of the air-tubes themselves. From the long continuance of the morbid action, depositions, which thicken the sides of the bronchi, take place among the muscular fasciculi, which frequently so encroach on the calibre of the tube as nearly to obliterate it. Other morbid alterations ensue, as *sequelæ*. The state of constriction of the air-tubes, now rendered permanent by the thickening that has taken place, not only impedes the entrance of air into the air-cells, but hinders its free egress, and alterations of structure of a mechanical nature are the consequences—dilatations of the air-tubes, or enlarge-

ment or rupture of the air vesicles. Now, the reason of this is not difficult to comprehend; for, is it not obvious, that, if there exist a continued obstruction to the free emptying of the air-tubes and cells by a narrowing of the upper bronchi, and compression be at the same time forcibly applied over them, as happens by coughing, the tubes and cells must either yield to the compressive force, and thus, by enlarging at the hither extremity of the obstruction, produce a dilatation of the bronchi in the one case, or *vesicular* emphysema in the other; or they must burst, and pouring the air into the cellular substance of the lungs, give rise to what is termed *interlobular* emphysema. The dilatations of the air-tubes are not regular either in substance or place. Sometimes they are thin and vesicular, at other times thickened and indurated: sometimes the enlargement extends the whole length of a bronchus, while, at others, the dilatations are detached and saccular.

There is usually not much difficulty in distinguishing this affection of the fascicular tissue of the bronchi from the other diseases of the chest at the beginning; but when the disease has been neglected, or of long standing, and purulent matter comes to be expectorated in abundance; then the diagnosis between it and tubercular consumption becomes somewhat difficult on account of the general resemblance of their symptoms. In drawing

the distinction, we are guided in our judgment by carefully attending to the previous history of the symptoms, as the noisy violence of the cough from its commencement, the paucity of phlegm ejected throughout the whole course of the disease, and more certainly still by the signs disclosed by the stethoscope in the various stages of the disease.

From the thickening of the air-tubes and consequent diminution of their calibre, the air is prevented from freely entering the air-cells, and hence the respiratory murmur is heard but feebly; and when any viscid phlegm blocks them up entirely, it is absent altogether. These sounds are modulated and change their place according as the cough removes the obstructing cause; and hence, the respiratory murmur becomes audible in a part where a little before it was imperceptible, and obscure in another where a moment ago it was quite distinct.

The narrowing of the bronchial tubes yields another sign, and that is, the peculiarity of the noise made by the air in passing the constricted portion. The sound rendered to the ear is a *dry* sonorous, or *sibilant* (whistling), rattle, accompanied with a clicking noise like that of a little valve. This latter sound has been explained by attributing it to the movements, backwards and forwards, of a small portion of viscid mucus, caused by respiration: if the dilatation of the bronchi, or

air-tubes, be considerable, bronchophony is then heard.

The symptoms and signs of pulmonary emphysema are, a constant difficulty of breathing, which is always liable to be much exasperated on every accession of a fresh cold; the countenance has an anxious expression; the respiration is high and frequent, and the pulse quickened; there is increased sonoriety of the chest on percussion, and the respiratory murmur is feeble,—forming collectively a concourse of symptoms usually denominated, in the ordinary vague application of the term, *asthmatic*.

When dry catarrh terminates in suppuration and partial ulcerations, constituting, in fact, bronchial consumption, the strength of the patient holds out much longer than in tubercular consumption; nocturnal perspirations are not so speedily induced, neither are they, when present, so profuse, colliquative, and debilitating; and though the suppuration be copious, the ulceration is never very extensive, circumstances rendering recoveries much more common in the one disease than in the other.

Among the causes giving rise to this affection of the air-tubes, none are so common as a *dry*, cold, and piercing wind; the inhalation, likewise, of various impalpable dusts, or acrid vapours, is a very usual source of the disease, and hence, several kinds of trades and occupations are particularly

obnoxious to it; such as needle-pointers, stone-cutters, millers, carpenters, smelters of metals, operative chemists, &c.

Though, in dry catarrh, the excessive suppuration and consequent debility be the most ordinary causes of the fatal issue; yet death at times ensues before suppuration takes place, and from a cause operating quite differently. Andral relates a case of sudden death in this disease, proceeding from the obstruction of a large air-tube by a mass of concrete half solid phlegm. When this happens at the origin of a principal bronchus, if not immediately displaced by the cough, it induces symptoms of suffocation; the patient is seized all at once with great difficulty of breathing, his face becomes swollen, and of a violet colour, his hands livid, and the pulse nearly extinct — symptoms which are only removed by the expulsion of the thick and viscid phlegm obstructing the air-tube.

The foregoing are the principal circumstances connected with *idiopathic* dry catarrh; but before proceeding to treat of the means of cure proper to it, we shall briefly notice the *symptomatic* and *sympathetic* forms of the complaint. A sympathetic disease is one that has its seat, not in the part first of all affected, but as the word expresses, originates from a consentient feeling with some other organ previously diseased. Thus, morbid conditions of the liver and stomach affect the lungs, and give rise to what are called liver coughs and stomach

coughs. A diseased liver may affect the lungs in three several ways.—Firstly, its size is at times so much increased by disease, that, suspended as it is to the diaphragm, its great weight alone irritates this muscle, and, by provoking its contraction, occasions frequent cough. Secondly, when the membrane which covers the liver is inflamed at its upper and back part, the disease is apt to spread along the continuity of the membrane, and involve that portion of it lining the under side of the midriff: here, again, we have in inflammation another source of irritation exciting this muscle to spasmodic action, and hence causing cough. In both the preceding instances the cough is *symptomatic*. The third, and last kind of liver cough, is that which is excited through the nerves communicating with this viscus and the lungs, by which the morbid irritation is conveyed from the seat of disease to the seat of sympathy. In whichever of these three ways cough is excited in the first instance, it is evident it cannot continue for any length of time without inducing disease in the lungs themselves from the violent concussions of the coughing, and thus, in the end, to institute that on which we treat—inflammation of the submucous interstitial cellular membrane of the air-tubes; in exactly the same way it produces, first inflammation, and then, ulceration both of the trachea and larynx, in the latter stage of consumption.

With respect to stomach cough, its pathological *rationale* is precisely similar. This form of cough usually affects the dyspeptic, in whom the disorder of the digestive organs is brought on by habitual intemperance, or something approaching to it. It is a cough very commonly met with in London among those who nightly spend their evenings in resorting to some close and heated room, and after exposing themselves to the chill of the evening in returning home, retire to bed with a highly excited and loaded stomach from what they have indulged in; the consequence of which frequently is, that every morning persons of such habits are seized with a violent fit of coughing, which does not cease until they have brought up a quantity of thick and viscid phlegm.

Of the Treatment of Dry Catarrh.

Though the particular tissue affected be different from that in common catarrh, yet both diseases being essentially inflammations, the treatment laid down as proper at the commencement of the one, is equally applicable to the other when either are slight. But it is otherwise, in the severer forms of the disease we now more particularly treat of; and, while a general bleeding in simple catarrh is seldom necessary, in dry catarrh, when the cough is severe and somewhat painful, leaving a feeling of rawness in the chest after it has

ceased, we ought never to omit it, even though the patient be not quite young, or very plethoric. We have often seen one bleeding so completely abate the disease, that very simple means besides afterwards sufficed to remove it altogether.

In slighter cases, and especially when the patient is infirm or delicate, leech-bleeding, or a blister applied over the upper part of the sternum, or between the shoulders, will, in general, supersede the necessity of resorting to venesection.

To diminish the frequency, and abate the violence of the cough, an object of great importance in this disease, it will be necessary to prescribe some demulcent mixture, to which either a little ipecacuan or antimonial wine may be added; and when we have reason to think the inflammatory action sufficiently subdued, we may further promote this object by calling to our aid some one of the anodynes—hyoscyamus, or some preparation of morphia. (22)

Still later in the disease, an anodyne may be

(22) ℞ Mucil. Acaciæ, ʒiiiss.
Liquor. Ammon. Acet. ℥iss.
Vini Ipec. ʒiss.
Syr. Simp. ℥i.
Aquæ Font. ℥ii. M.
Sumat cochl. ampla duo tusse urgente.

Cui hactenus addendum sint
Tr. Hyoscy. ʒiss. vel,
Liq. Sedat. Batleii, ♏xl.

advantageously prescribed at bed-time, when we judge the cough to depend more upon irritation than inflammation. (23)

However, it very frequently happens, as I before observed, that medical advice is not sought for at the commencement of the disease, but only after it has been allowed to go on unchecked for a considerable time, or if temporarily subdued through proper measures, fresh exposure to cold, or some other imprudence, has reproduced it in an aggravated degree of intensity. In these cases, after premising such depletory measures as symptoms and circumstances indicate, together with counter-irritation by blisters or tartar emetic ointment, nothing will be found so efficacious in allaying the irritation which excites the cough as the hydrocyanic acid.

Few circumstances more distinctly evince the specific character of different tissues, or the importance of a knowledge of the relation which their morbid conditions have with therapeutics, than the almost total inefficacy of cathartics in the cure of *dry* catarrh, and their powerfully remedial influence in the *mucous*. Indeed, beyond the occasional necessity there may be for their employment to counteract constipation, cathartics are of

(23) ℞ Tinct. Hyoscy. ♏xxxv. vel,
Tr. Opii, ♏xxv.
Syr. Simp. ʒiii.
Aquæ Font. ʒix. M. Ft. haustus.

very little use in the acute stage of the disease, and are positively injurious in the chronic. The same observation, however, does not apply to diaphoretics, for by equalising the circulation, they tend to abate all local inflammation, and, therefore, they may be continued in dry catarrh as long as this exists either in an acute or sub-acute form.

We have now to consider dry catarrh in its chronic stage, when, through neglect or otherwise, we have to encounter greater difficulty in the treatment. The depletory and other antiphlogistic measures so necessary in the first periods of the disease are no longer proper, for, though inflammation be still existent, it has changed its character; there is now much more of irritation mixed up in the symptoms than arterial activity, which strong depletory and antiphlogistic treatment, if resorted to, would only aggravate.

The essential character of acute inflammation consists, in our opinion, in an inequality, or want of simultaneous action and proportionate power, between the larger arterial trunks and their corresponding capillaries; and that, while this action and power are augmented in the first class of vessels, they suffer a simultaneous diminution in their ultimate ramifications. Now, when inflammation becomes chronic, though the larger arterial trunks may have lost all their primary activity, and have even fallen below what is natural to them in health, an opposite and countervailing change

has not ensued in the capillaries; they have not regained their healthy tone, but, on the contrary, the state of inflammatory congestion has become greater.

Such being the altered pathological nature of the disease in its chronic state, we may thus readily perceive how any strong antiphlogistic measures, by increasing the general debility, will aggravate rather than relieve the symptoms of every chronic inflammation. We are therefore obviously called upon to adopt means to correspond with the altered nature of the disease, and since this principally consists in a state of capillary debility, and hence of capillary congestion, the evident indications of cure are to remove this debility by tonic stimulation, to relieve the congestion through derivation, and to still the cough, which tends so powerfully to keep up and increase both, by sedatives.

With the first intention, we are to resort to the use of those stimulants which find their way directly to the capillaries in their passage out of the body by the exhalents. It is in this way that sulphur often acts so beneficially in chronic coughs: myrrh, galbanum, assafœtida, and ammoniacum, operate as remedies after the same manner, and with one or other of these we are in the habit of combining camphor; for though it has not been shewn that this substance, like the others, is excreted by the exhalants, it has been detected in the

blood, and one of its main points of action we know to be that of a stimulant on the capillary system.

But, besides operating on the local debility, it will be proper to gently stimulate the general system. Minute doses of calomel and opium are often of the greatest service, for no medicine more promotes the removal of any thickening that may have taken place in the cellular tissue of the air-tubes, by stimulating to increased activity the absorbent veins of the part, than calomel. When the cough has nearly ceased, we may venture on a little quinine, carefully watching its effects.

The best derivatives are mustard poultices, repeatedly applied to different parts of the chest, and tartar emetic ointment used so as to bring out a crop of pustules; while the circulation on the surface of the chest may be further promoted by a Burgundy pitch plaster between the shoulders, or on the breast: the latter remedy has another good effect besides—it protects the air-tubes from any sudden impression of cold from without.

Change of air is often of great service in obstinate cases, and the means, which had no beneficial effect at home, are frequently quite successful in another air. Indeed, change of air, alone, is sometimes sufficient to remove the complaint.

When suppuration and ulceration have taken place, and bronchial consumption is established,

although this event adds much to the uncertainty of the issue, it does not materially alter our practice.

It is superfluous to say that it behoves the patient to be cautious how he exposes himself to the vicissitudes of the weather. He should protect himself against them, even though confined to the house, by warm clothing. His diet, especially, requires regulation: this should be nourishing, but easy of digestion; and he is to avoid wine and all spirituous and fermented liquors, which only increase the state of capillary debility by their primary effect of over-stimulation.

We have still a word or two to say before concluding, in reference to the treatment of symptomatic and sympathetic dry catarrh.

It is intuitively obvious that, when this disease has its origin and dependence on either the liver or stomach, no treatment, directed solely to the secondary affection (the disease set up in the air-tubes), can prove any thing else than palliative and temporary, unless we remove its primary cause, the disease going on in one or other of those first-mentioned organs. Now, it does not belong to our present subject to treat of either; but, as one cause of stomach cough is so readily and directly remedied, if not permitted to take too fast hold of the lungs, we mean, the nightly habit of frequenting heated rooms, and there stimulating and gorging the stomach with strong excitants, we

may cursorily be allowed to recommend the abandonment of habits so hurtful to health, and which so often lead to the firm installation of a morbid state of the lungs that very commonly ends in bronchial consumption.

It is on this principle, that a short sojourn at some of the watering-places does some of our London citizens so much good: for, independent of the change of air, and other conducing circumstances, it separates them for a time from their unhealthy habits of enjoyment and recreation.

CHAPTER IV.

OF THE COUGH ATTENDANT AND CONSEQUENT ON MEASLES.

This kind of cough requires only a brief notice; not because it is not important, but on account of its analogous nature to others which have already been fully discussed.

The cough *accompanying* measles arises from the inflamed state of the mucous membrane of the air-passages. In slight cases, the fauces and upper part of the wind-pipe alone are affected; but frequently the inflammatory action does not stop here: having reached the trachea, it descends, and, involving the air-tubes in its course, invades the entire mucous lining of the air-cells. Symptoms characteristic of the function of the parts affected immediately ensue; along with considerable hoarseness, the patient is vexed with a violent and frequent cough, the breathing becomes difficult, and when the disease runs high, the inflammation assails the substance of the lungs, and we then have all the symptoms of pneumonia. At the height of the fever attendant on measles, the

inflammatory action is most violent and acute, and often lays the foundation for secondary diseases of the most dangerous nature. After the specific symptoms have disappeared, this disease is prone to leave a highly irritable and inflammatory diathesis behind, possessing the strongest tendency to call into activity any other morbid disposition that may lie dormant in the constitution; and hence, consumption, among the rest, very often supervenes asa sequela of measles.

When treating of phthisis, we mentioned the manner in which it was probable inflammatory action operated, under certain constitutional circumstances, in the primary formation and developement of tubercles. This it is not necessary to repeat; and the same may be said with respect to the proper treatment to be adopted in the different kinds of cough proceeding from measles: it will be found laid down under the several heads of catarrh, pneumonia, and consumption.

CHAPTER V.

OF GOUT IN THE LUNGS, OR GOUTY COUGH.

There are two forms under which gout not unfrequently appears in the lungs; the one of an acute character, the other of a chronic. The first begins with the ordinary symptoms of bronchitis, a violent, dry, and noisy cough, and slight febrile symptoms. After a time, the gout takes up its ordinary position by attacking the foot, the seizure, for the most part, coming on in the night. From the moment the disease makes its appearance in the regular form, the cough sensibly abates, and soon ceases altogether. Patients whose fits of gout are apt to return about the latter autumnal and during the winter months, are most liable to be thus affected; and with some it is so usually the harbinger of their periodical attack, that, adopting the wise maxim, "*Venienti occurrite morbo,*" they treat the disease in the lungs the same as if it were in its regular place — the foot.

A circumstance characteristic of this kind of cough is, that, while the patient remains in a warm room, the cough is little troublesome, and often

will cease altogether for hours; but the slightest change of temperature, such as going into the passage, or up-stairs to a bed-room, is certain to bring on a violent fit of coughing. This excessive sensitiveness of the lungs to atmospherical variations is not peculiar, it is true, to gouty cough; but it possesses this particularity about it, that the degree of sensitiveness, and that of the inflammatory action, are not co-ordinately proportionate.

The other kind of gouty cough I spoke of, or the chronic, is confined in its attacks to those old and infirm subjects whose constitutions have been broken up by long-repeated aggressions of the disease. This form of gout does not fly to the extremities, but remains fixed in the lungs, while the paroxysm lasts. It is of a much more dangerous character than the first-mentioned species; and, assuming, as it is eventually apt to do, the pituitous character, it kills the patient in the ordinary manner of this disease—that is, by the destructive reaction of its own consequences—by the gradually increasing debility augmenting the quantity of phlegm, while the copious secretion of the latter reciprocally augments the debility: the air-cells becoming filled with mucus, which, from weakness, the lungs cannot expectorate, excludes the air inspired from coming in contact with the blood; till, at length, the phlegm accumulates in such quantity as to produce slow suffocation, and the vital powers become extinguished in conse-

quence of a reacting series of destructive causes and effects.

With respect to the treatment of the first form of the disease, nothing so effectually relieves the pulmonary affection as colchicum. A demulcent mixture (24), containing colchicum and ipecacuan wines, may be taken during the day; and a full dose of colchicum, combined with some carbonate and sulphate of magnesia, at bed-time. This practice I have repeatedly seen, not merely relieve the lungs from the gout, but sometimes remove the paroxysm entirely.

Now, though the plan of treatment to be adopted, in chronic gouty cough, be somewhat similar, it is infinitely seldom so successful. We are to avail ourselves of the aid of colchicum in this form of the disease, also; but, as the expectoration rather requires to be checked than promoted, we must dismiss the ipecacuan, and substitute one of the preparations of morphia, or hyoscyamus, in its stead. The disease is to be solicited to the extremities by warm foot-baths, mustard poultices, and the like; and it is to be gently expelled from the chest by the employment of

(24) ℞ Vini Sem. Colch.
—— Ipecac. āā ʒi.
Mucil. Acac. ʒiiss.
Mist. Amygd. ʒv. M.
Capiat æger cochl. amp. duo quater in die.

external derivatives. The regimen, which, in the first kind of gouty cough, requires to be somewhat severe, is in this, on the contrary, to be rather generous and sustaining. The body is to warmly clad at all seasons of the year; and all the emunctories of the system kept in due activity, by regulating them by appropriate means, as they happen to require it.

CHAPTER VI.

OF ASTHMA.

No disease, for a long time, was less understood, by medical men, than asthma. Every difficulty of breathing, if fixed and continuous, was designated *asthmatic;* and the same indefinite application of the term still remains in vulgar use. This general application of the word caused it to be employed to denote a variety of morbid states of the lungs, very different from one another; and, hence, Dry Catarrh was often called "Dry Asthma," in contradistinction to the chronic form of pituitous catarrh, which was designated "Humid Asthma."

Before that useful instrument, the stethoscope, was invented, the great difficulty of breathing, attendant both on dropsy of the lungs and enlargement of the heart, was considered asthmatic; and, as the difficulty of respiring has fits of aggravation, so violent at times as to oblige the patient to sit upright in bed to enable him to breathe, this circumstance perfectly well accorded with the purely spasmodic character affixed to the generic complaint. It

is by the constant subcrepitant rattle, the indistinct respiratory murmur, and other signs obtained by the stethoscope alone, by which we can with any certainty assure ourselves of the exact nature of the first of these diseases, and pronounce it dropsy (*œdema*) of the lungs; while by the forcible, dull, and prolonged impulse of the heart's contractions, ascertained by the same instrument, we arrive at the knowledge of the state of enlargement (*hypertrophy*) of the heart.

But, since dissection has shewn that there exists a pure spasmodic affection of the lungs, in which there is no appreciable lesion of the organ, however much there may of its function, it appears to us, that, if we are to retain the term at all, it ought, in strict medical nomenclature, to be confined to indicate one specific disease; and with such an application of it, we now use the word "Asthma" to denote alone the pure spasmodic affection spoken of, referring the reader to what has been said of "Dry and Pituitous *Catarrh*," for the description and treatment of those diseases which, in ordinary language, are denominated, Dry and Humid *Asthma*.

Pure spasmodic asthma is comparatively a rare disease; so much so, that some have been inclined to question whether there be any such disease at all: but, independent of the testimony of *post-obit* examinations, we are confirmed in the persuasion of its real existence by the fact, that

causes which act solely on the nervous system are capable of producing a paroxysm of spasmodic asthma, which are totally inefficient in other affections of the breathing. For example, certain odours and mental emotions will induce it;* and we have, moreover, an analogous corroboration of its existence in chincough, which, in its pure form, and before it becomes complicated with its own morbid consequences, is another purely spasmodic affection of the respiratory organs.

The pure form of the disease is confined in its attacks to those of a nervous temperament, and differs from its pseudotypes, in the fit concluding without any expectoration, and in there remaining no difficulty of breathing after it is over. If the stethoscope be applied to the chest, little or no respiratory murmur is heard during the continuance of the paroxysm, and when it has ceased, the sound of natural healthy breathing alone remains. But, in the dry and humid catarrhs that have become chronic and habitual, there is always more or less difficulty of breathing present; and when, by the supervention of a fresh cold, the dyspnœa is much and suddenly aggravated, this

* There is great reason for suspecting this affection to be at times merely a mode of hysteria. This species of cough (the hysterical), is by no means uncommon, and requires very different treatment from almost every other. All depletory measures are hurtful: not less so are sedatives; opium in particular is injurious, and demulcents are of no use.

accidental paroxysm usually terminates in the expectoration of more or less of phlegm; on the acute aggravation ceasing, the habitual chronic disease does not cease likewise, and hence the habitual difficulty of breathing still continues.

The cause of this particular affection has not been correctly ascertained. For my own part, I am inclined to suspect its seat to be in the dorsal portion of the spinal marrow, from what I have observed in one or two cases of the efficacy of remedies when applied to the back.* But the treatment which affords the speediest relief is an emetic; and, in this respect, we trace the analogy of its nature to chincough, as far as regards their both being pure spasmodic diseases.

We know that emetics act principally on the muscular fibre by an impression conveyed by sympathy from the stomach to the abdominal muscles. Now, it appears to me, that vomiting operates as a remedy in spasmodic asthma, by producing clonic spasm among the respiratory abdominal muscles, by which the tonic spasm affecting the muscular *fasciculi* of the air-tubes is solved both suddenly and violently. There are many facts in therapeutics analogous to the above, which shew that, by simply interrupting a morbid action for a time, you often succeed in checking its regular accession, or

* For some further illustrations of these views, see the chapter on "Hooping Cough."

in preventing its recurrence altogether. We find it so in agues; we have witnessed it such in asthma and chincough.

It is in this form of asthma that we have seen stramonium most successful. But, while we are using temporary means to solve the paroxysm, we must endeavour more effectually to prevent its recurrence, by strengthening the tone of the nervous system in general. Valerian and bark prove a beneficial combination for this purpose; (25.) and both quinine and the metallic tonics may be prescribed either in the form of pill or mixture, along with some of the bitter extracts or infusions.

Advantage is to be taken of pure air and healthy exercise, and of whatever tends to improve the general strength.

When the disease can be traced sympathetically to any disorder of digestion, and particularly if to the prevalence of acidity in the stomach, we must counteract this, palliatively, by magnesia or an alkali, and more effectually still, by strengthening the digestive organs themselves.

(25) ℞ Pulv. Cinchonæ, ℥i.

—— Valerianæ, ℥ss. M. bene, deinde divide in chartulas xxiv. Sumat i. ter in die.

CHAPTER VI.

OF PLEURITIS, OR PLEURITIC COUGH.

Pleurisy is an inflammation of the membrane, called *pleura*, which envelopes the lungs and lines the ribs. The disease hence is divided by medical writers into pulmonary pleurisy, and costal pleurisy, according to the part of the membrane which is affected.

Pleurisy is characterised by acute pain in the side, most commonly on the right, great difficulty of breathing, dry, short, interrupted cough, considerable fever, and a strong, hard, and frequent pulse. The cough in pleurisy is not occasioned by any irritation within the lungs, as happens in most of the diseases we have hitherto treated on, but arises from the *extension* made on the diseased membrane by the action of respiration. In pulmonary pleuritis, the pleura is necessarily stretched on the lungs becoming filled with air, and the same thing as necessarily happens in costal pleuritis on every full inspiration by the elevation of

the ribs. Hence it is, that inspiration in this disease not only exites cough, but pain, and both circumstances obliging the patient to distend his chest as little as possible, the breathing thus becomes small, short, frequent, interrupted, and irregular; inspiration being quick and short on account of the pain it occasions, and expiration slow, in order to avoid the pain a quicker movement would give rise to. By one of those beneficent laws, so often observable in the physiology of the human economy, the natural movements of the chest in this disease are always much enfeebled in the side affected; and another circumstance connected with pleurisy, not less curious as a pathological phenomenon than important as a distinguishing symptom of the disease, is, that the ribs corresponding to the place affected, are *entirely motionless,* while the others continue to rise and fall, though in a diminished degree.

We have already had occasion, more than once, to advert to our obligations to the stethoscope for making us acquainted with diseased phenomena going on in the interior of the body, of which, before its discovery, we were entirely ignorant; and one, among others, of the many advantages which has accrued from its introduction into practice, as a means of diagnosis, is the ascertainment of the fact, that more or less of effusion into the cavity of the thorax always accompanies pleurisy.

If the quantity of serosity poured into the chest, either originally, or by progressive accumulation, be great, the peculiar sound heard through the stethoscope, and which, from its fancied resemblance to the voice of a goat, Laennec has termed *ægophony*, becomes inaudible. Still, we find that, when, by reabsorption, this is reduced to the proportion proper for the production of the phenomenon, the auscultatory sign of effusion reappears, and gradually diminishes in distinctness, until it ceases altogether, when the effused serosity is completely removed.

Throughout the whole disease the respiratory murmur is pure, but weak. Percussion, as might naturally be imagined, is painful in pleurisy, but renders the natural sound for an obvious reason — the air-tubes and air-cells are not affected by the disease.

Water in the Chest.

No disease, with the exception of water in the chest, at its commencement, can be confounded with pleurisy, so long as ægophony exists. This stethoscopic sign is always a distinguishing characteristic of one of these two affections, but by attention to the other indications and symptoms present in each case, we run no danger of mistaking the one disease for the other.

Water in the chest is essentially a secondary or sequelose disease, and does not resemble the

effusion of serosity in pleurisy in its pathological nature, the latter being the effect of the active inflammation going on in the pleura, and, therefore, is to be regarded simply as a symptom; while the former is the result of some other preceding disease not primarily seated in this membrane. For example, disorganisations of the heart, and of the large arterial trunks in its vicinity, frequently induce water in the chest; so does a disorganised state of the substance of the lungs themselves in consequence of reiterated attacks of inflammation, particularly in broken-down constitutions. This disease, furthermore, has sometimes a marked tendency to prevail in certain families, and is apt to ensue on any severe disease with which they may be attacked, and more especially if that has affected the lungs.

Water in the chest is indicated by the following external signs,—as the water fills in, the shape of the ribs disappears externally, and, dilating the spaces between them, the affected side becomes smooth and rounded. The side containing the effusion loses all movement when the fluid exists in considerable quantity: and the reason of this is obvious; for, by it spressure, it so condenses the lung that it cannot be inflated by inspiration: the ribs, also, from being pressed upon from within, are kept constantly raised; and hence, the side diseased not only measures more, but evidently appears larger, than the opposite.

But, while dropsical effusions are the common consequences of the chronic disorganisations we have mentioned, those resulting from pleurisy are the formation of false membranes or bands. The tendency of the latter disease is, as has been said, to throw out serosity into the cavity of the chest. Now, thoracic serum abounds with fibrine which separates from the watery portion of this fluid; and, while the latter is usually removed by absorption, the coagulated fibrine that remains forms adhesions between the ribs and the lung, which, on getting organised by the vessels of the inflamed pleura shooting into it, thus establishes a firm and permanent junction between the one and the other. When this takes place by bands, the lung, though restrained in its action, can still act apart from the ribs; but when the union between the two is so intimate as to cause them to adhere together in close contact, it is evident that the lung cannot expand, but by the direct operation of the ribs. When the factitious membranes so constrain the lung that it cannot expand at all, the power of respiring on the side affected is entirely destroyed, and, consequent on this, the ribs collapse in order to approach the contracted lung,—a circumstance which affords an external indication of the particular nature of the disorganisation that has taken place.

It is surprising how quickly, at times, the effused lymph becomes organised. It has been ascer-

tained by experiments to become so within twenty-four hours, when the redness of the new vital substance gradually disappears, assuming, when the process of organisation is complete, the appearance, in all respects, of either a serous or cellular tissue.*

It is a circumstance meriting notice, how prone this new production is to become the *nidus* of tubercular depositions. Andral has known this to take place within a fortnight after the first symptoms of a pleurisy.

The pleura itself admits of interstitial deposition with the greatest difficulty. Hence, thickenings of this membrane are rare: but it is exceedingly liable to adscititious thickenings from depositions on its unattached surface becoming organised; and the sub-serous cellular tissue connecting the pleura to the ribs and intercostal muscles is, likewise, subject to the same change from the same cause.†

Dr. Hope mentions "some very curious facts which have been ascertained respecting new formations by the recent researches of Dr. Dollinger.

"This physician has fully demonstrated, that currents of liquids may establish themselves in animal matter in the progression of formation *without the presence of canals to give them passage:* they wind their way through the solids. The agency which gives birth to these currents is

* Hope's *Morbid Anatomy*, p. 22. † *Ibid.*

unknown; but Andral thinks, and with much apparent reason, that it is connected with electricity." —*Précis,* i. 379, note.

We now come to the treatment of pleuritis; but as this is so identical with that proper to the disease (*pneumonia*) which is next to occupy our attention, we shall defer speaking of it at present, in order to treat of both together.

CHAPTER VIII.

OF PULMONITIS, OR PULMONIC COUGH.

We have treated on the different diseased affections of the lining membrane of the lungs, and of their exterior envelope, the pleura: one portion of their structure still remains to be considered, and that is, their parenchyma, or the part of which their substance is constituted.

The entire frame-work of the human system is composed, as every anatomist knows, of cellular membrane, and the form of its parts is wholly derived from the variety of the manner in which this is constructed. Now, it is in the frame-work of the lungs that the disease we indifferently call pulmonitis, pneumonitis, or pneumonia, is seated, and as cellular membrane is peculiarly the seat of phlegmon, it follows, that pneumonia must be purely a phlegmonous inflammation, a fact which we shall fully demonstrate, in the sequel, by the history of its pathology.

The symptoms characterising this disease are the following:—deep-seated pain in some part of

the lungs, which is obtuse, not acute as in pleurisy; great difficulty of breathing, particularly when lying on the affected side, cough, and fever, attended, for the most part, with a full, strong, and frequent pulse.

The robust and plethoric are the most liable to pulmonitis, and it prevails chiefly in winter and the beginning of spring. As an idiopathic disease, a common cause of pulmonic inflammation is sudden exposure to cold when the lungs are heated. But the very reverse of this, that is, sudden exposure to heat when the lungs have been chilled, is a still more frequent excitant of pulmonitis. On entering a warm apartment, upon quitting the open, cold air, the capillaries relax, and the blood, rushing with violence and in increased quantity into them, thus not unfrequently excites inflammation by what is termed, reaction. External injury, as falls or blows fracturing the ribs, is another common cause of this inflammation; it is apt to supervene also on several diseases, as consumption in its ulcerated stage, measles, &c., and it accompanies certain forms of typhus. Pneumonia is said to have its seat in the *substance* of the lungs; but, to speak more anatomically precise, it is the interstitial cellular tissue, investing and connecting the lobules, air-vesicles, and vascular structure of the lungs which is the exact site of the principal inflammation; but that it partially affects also the mucous membrane of the air-passages, is manifest from the glutinous tenacious phlegm which is expectorated,

especially at the commencement of pneumonia; indeed, this symptom, together with the crepitant noise it gives rise to, as heard with the stethoscope, is that which is most peculiar to, and distinctive of, the disease. Now, it is one of the characteristic terminations of inflamed cellular membrane to suppurate, and, accordingly, we find purulent infiltration of the lungs not an unfrequent consequence of pneumonia. When this takes place, it is indicated by severe shiverings, by the pain abating, the patient now being able to lie on the side affected; but the breathing becomes more oppressed, and the matter, on finding its way into the air-tubes, is observable in the sputa.

Why the pain in pulmonitis is obtuse appears to be owing to the ready extensibility of the lax structure of the lungs; but while this circumstance lessens the acuteness of the pain, it is the principal cause of the extreme difficulty of breathing, since the great degree of vascular engorgement it permits of, very much diminishes the calibre and capacity of the minute air-tubes and air-cells by the compression it produces, and thus occasions the dyspnœa.

Another pathological change which very often occurs in this disease, is *hepatisation* of the lung, or the conversion of its spongy substance into a solid matter resembling *liver*. This morbid alteration of structure has been determined to arise from the gradually increasing deposition of fibrine in the circular walls of the air-cells, by which the latter

become totally obliterated, and assume a solid granular form. It is through inflammation attacking a hepatised portion of lung, and running in to suppuration, that abscesses, or vomicæ, as they are called, are formed.

Lastly, the lungs sometimes mortify in cases of severe inflammation; a result which most frequently happens in constitutions broken down by habitual and long continued intemperance.

Now, if we take a review of the pathological results of pulmonic inflammation, we shall find them all to bear out its purely phlegmonous character. We have great vascular engorgement of the cellular tissue of the lungs,—suppuration, either in the form of purulent infiltration or abscess,—hepatisation, if the effused fibrine becomes organised; or gangrene, when, through the violence of the action, the vitality of the part is destroyed.

We have already noticed the most certain among the diagnostic signs of pulmonitis at its commencement; the *crepitant* noise in breathing, which is heard by means of the stethoscope, resembling that made by salt when thrown into the fire. It is this sign, combined with the history of the symptoms, that mainly enables us to ascertain the presence of this, otherwise at times, obscure disease. As the inflammation abates, and the phlegm becomes more abundant and less viscid, the noise in breathing changes to that called the

mucous or bubbling rattle. With respect to the sound rendered by percussing the chest, this is necessarily dull on account of the diminished size of the air-cells.

When hepatisation takes place, the respiratory murmur ceases with the obliteration of the air-cells; or, if respiration be heard, it is only in the large bronchial tubes, when the rhonchus is rendered audible through the consolidation of the substance of the lung surrounding them. Percussion, likewise, is dull for the same reason, as the chest is resonant only in proportion to the open, free, and spongy texture of the lungs.

When suppuration takes place, the resonance of the chest is also dull; and a rattle, like the bursting of large bubbles, is heard, at first, in detached points, and afterwards, throughout the whole diseased part.

We shall now proceed to point out the method of cure, in which we will treat conjointly, for the reasons already stated, of that proper to pleurisy and pneumonia.

From the close proximity and direct communication of the lungs with the heart, and the short course, consequently, which the arteries proceeding from the latter have to run ere they expand in ramifications throughout the substance of the former, it is evident that, in an inflammation of the substance of the lungs wherein the heart pulsates with inordinate force and frequency, the

increased quantity of blood which is thus sent into the organ, and that with an augmented impetus, must strongly tend to aggravate the inflammation. Hence, we at once perceive both the necessity for controlling the heart's action in this disease, and the *modus agendi* by which it proves remedial.

Our most direct manner of doing this, is by a large and full bleeding taken from a large orifice; and this is to be repeated according to the continued urgency of the symptoms, and the effect which the previous venesection has had in subduing them.

Though the vascular communication between the seat of the disease and the centre of the circulation be not quite so direct and immediate in pleurisy as in pneumonia, the *rationale* and effect of the practice is not less proper or beneficial.*

* It was an ancient prejudice to practise bleeding in pleurisy always on the side of the body opposite to that affected, vestiges of which are still to be found at this day in the opinions of the vulgar regarding bleeding. There arose a curious controversy on this head about the beginning of the sixteenth century.

Previous to this period, it had been the universal and orthodox practice always to bleed on the side opposite; and when Brissot, a French physician, ventured to recommend bleeding on the same side as the disease, Denys, the king's physician, not only branded the doctrine of his opponent with falsehood, but denounced it as *impious and heretical*, and as pernicious to the body, as Luther's schism was to the soul: Brissot, in short, was accused of being "a downright Lutheran" in practice. The dispute ran so high, that it was at first referred to the University

When, by one or more bleedings, we have to a considerable extent abated the force of the circulation, we are next to rely on the properties of the tartarised antimony to subdue what remains. This it accomplishes in more ways than one, for, independent of its powers of controlling the action of the heart and arteries by the nausea it excites in minute doses, it, at the same time, relaxes the exhalants opening on the surface of the skin and into the air-cells, thus promoting, either by dilution or otherwise, the expectoration of the phlegm.

Laennec's method of administering the tartarised antimony in pneumonia, after venesection, was to give a grain of it every two hours in some sweetened liquid till the sixth time, when the use of the medicine was intermitted for the next six hours, unless the symptoms were urgent, in which case he continued its use until they abated. Patients generally vomit two or three times the first day, and it also affects the bowels, both of which cease on the second.

Peschier, of Geneva, gives it in equally full

of Salamanca for decision, and afterwards to the Emperor, Charles V.; but Charles III., duke of Savoy, happening to die in the interim, after being bled on Denys's side, this event went farther to settle the question than any *Senatûs consultum* of Salamanca!

After this, can we say that Le Sage's picture of the opinions and practice of the great Dr. Sangrado is overdrawn? — Borelli, in fact, might very truly have sat for the original!

doses in the same disease. He dissolves six, twelve, and sometimes fifteen grains of tartarised antimony in six ounces of camphor mixture, and administers a tablespoonful every half hour; while Polidori's (of Florence) plan is to give a grain and a half or two grains every evening until the disease is subdued. In England, we regard doses such as the foregoing as unnecessarily large, and prefer obtaining a slight nauseating effect, to full vomiting, in this disease.

In inflammations attended with strong febrile symptoms, there is always present a considerable degree of irritation; until, therefore, both the one and the other are somewhat diminished, blisters do not prove efficacious; but the instant we have, by previous measures, succeeded in allaying the irritable state attendant upon the first stage of inflammatory fever, we may then have recourse to the derivative operation of blisters with great advantage. In *costal* pleurisy they are of the most marked service, for a reason that is obvious—they can be applied *immediately* over the seat of the disease.

There is a medicine frequently evincing great power in checking the violent action of the heart and arteries, as well as producing other effects not less beneficial in the two diseases we treat of, and that is, digitalis. A peculiarity possessed by this drug is, that, while it diminishes the power of the heart, it appears to increase the activity of the capillary veins: it is, also, a powerful diuretic.

Now, however beneficial all these effects may be in pneumonitis, they are still more so in pleurisy, since they not only tend to prevent the further effusion of serosity into the cavity of the chest, but also to promote its reabsorption, and its evacuation afterwards, by the kidneys.

Digitalis may be given either in the form of powder, tincture, or infusion (26, 27, 28): the last is most diuretic, but the tincture is the most manageable when we wish it to affect the pulse. The latter effect is also found most readily to ensue in the recumbent position. When it produces giddiness, nausea, or vomiting, the medicine must be discontinued, and these effects counteracted, if intense, by gentle cordials.

In the beginning both of pleurisy and pneumonia, nothing abates the cough so effectually as bleeding and the other anti-inflammatory measures above prescribed, for its primary source is the

(26) ℞ Pulv. Digit. gr. ss.–j.
Camphoræ, gr. ij.
Cons. Ros. q. s. ft.
Bolus 4tâ quâque horâ sumendus.

(27) ℞ Tinct. Digit. ℥xv.
Syr. Aurant. ʒij.
Mist. Camph. ʒx. M. ft.
Haustus 4tâ quâque horâ sumendus.

(28) ℞ Infusi Digit. ℥ss.
Tinct. Cardam. ʒss.
Aquæ Font. ℥j. M.
Ter quaterve in die capiendum.

overgorged state of the pulmonary circulation; but when this is in a considerable degree lessened, we can have recourse to anodynes with safety, in order to check the violent concussion which coughing gives to the diseased organ. Opiates are our best remedies for this purpose, and they may be combined with demulcents (29, 30).

With regard to the treatment of pleurisy and pneumonia, when they supervene either as symptoms or accidents, on measles, consumption, or typhus fever, though the principle be identical with that just laid down, it nevertheless requires great modification in its application, especially to the two last-mentioned diseases; in measles it rather demands moderation, than any considerable modification.

Inflammation of the substance of the lungs in consumption is, for the most part, a sequelose disease, proceeding from the ulceration going on in the lungs, or it may proceed from the irritation of tubercles. Pleurisy, on the contrary, is rather to

(29) ℞ Mist. Amygd. ℥ivss.
Tinct. Opii,
Vini Antim. āā ♏xl.
Cons. Rosæ Caninæ, ℥ss.
Syrupi Lemonis, ℥j. M.
Sumat Cochl. ampl. ij. tusse urgenti.

(30) ℞ Muriat. Morphiæ, gr. ss.
Syr. Tolut. ʒij.
Mist. Camph. ʒx. M. et solve. Fiat haustus, h. s. s.

be considered an accident than a sequela, occurring from some casual exposure to cold. When pneumonia supervenes on consumption, it usually occupies the superior lobe of the lung; whereas, in idiopathic pneumonia, the inflammation more frequently attacks the inferior lobe.

The necessity for blood-letting occurring in consumption, is always to be regarded as an unfortunate circumstance, requiring us to be exceedingly cautious how we have recourse to it at all, and when it becomes absolutely necessary, we cannot be too careful of the extent to which we carry it; after this, we need not say that the quantity of blood to be abstracted in pneumonia supervening on consumption, ought to be reduced to the least possible extent the urgency of the symptoms will admit of.

Digitalis is of great service in subduing sequelose pneumonia: so are blisters; and, unless the inflammatory symptoms be very violent, we often, through their aid alone, may avoid the necessity of resorting to bleeding at all.

Hydrocyanic acid is of no use either in pleurisy or pneumonia, and purgatives are actually detrimental: the former has no effect on the pulse; and the latter throw the blood from the surface to the interior by the chilliness they create. However, this effect does not prevent a proper attention to obviate a positive state of constipation.

CHAPTER IX.

OF HOOPING COUGH.

Hooping Cough, or Kinkcough, as it is sometimes called, is so named from the peculiar noise made in the inspiration preceding the coughing. It is purely a spasmodic affection at its commencement, but, like many other diseases, it is capable of superinducing others in its course, by its violence and continuance.

The exact nerves that are affected in this disease have not yet been satisfactorily ascertained; but certain of the symptoms would seem to indicate that those connected with the glottis are more particularly included in the morbid derangement.

The hooping cough is not usually heard at the commencement of the disease. On the contrary, it begins with a common cough, some oppression of breathing, and slight febrile symptoms; but, as the disease proceeds, the cough assumes a convulsive character; it comes on in violent paroxysms, and a hoop is now heard on inspiration. When the cough continues long and

violent, the face becomes swollen and livid, from the impediment offered to the free return of the blood from the head, which in plethoric children sometimes occasions a bleeding from the nose, the eyes seem as if starting from their sockets; at length, some viscid, frothy phlegm is expectorated, or the continued concussion sustained by the stomach from the violence and length of the coughing produces nausea, which, terminating in vomiting, puts an end to the paroxysm by solving the spasm.

Were proof wanting of the pure spasmodic nature of this disease, none could well be adduced more conclusive of the fact, than the circumstance that children (its most frequent subjects) return to their amusements immediately after the paroxysm has ceased, as if nothing had happened. There are other circumstances, besides, that could be adduced, if necessary, which establish the purely nervous character of hooping cough. It is proved, for example, by the nature of many of the accidental causes capable of producing a paroxysm, such as emotions of the mind, a full meal, indigestible food, &c. all of which evidently operate sympathetically. There are some, on the other hand, that induce the spasm in a more direct manner; as violent exercise, for instance, which, by causing an accumulation of blood in the lungs, brings on the fit; the inhalation of any irritant,

such as smoke, acrid vapours, and the like, will also produce a paroxysm. During the cough, no respiratory murmur can be heard.

Hooping cough, as I have observed, is chiefly a disease of childhood; but it ocasionally happens that those adults who have escaped it as children, are affected with it; for, until the constitution has undergone the ordeal of this disease, it always remains obnoxious to its attack, at least up to a certain period of life.

Hooping cough seldom proves fatal, and when it does so, it happens almost always in very young children. We judge, in these cases, of the degree of danger, by the intensity of the fever and the difficulty of breathing—symptoms giving reason to apprehend that inflammation of the lungs has supervened. But it not unfrequently happens for hooping cough to prove the indirect means of giving rise to certain other diseases much more dangerous in their nature than itself; and hence the origin of consumption, dropsy of the lungs, dry asthma, mesenteric struma, and water in the brain, can frequently be traced to a severe and protracted hooping cough.

The Treatment.—In the therapeutic treatment of this disease, we are guided in our indications by three circumstances; the constitution of the patient, the intensity and character of the symptoms, and the specific nature of the disease itself.

Though the abstraction of blood be in general unadvisable in all purely spasmodic diseases, yet in hooping cough, when the patient is of a plethoric habit, and there is reason to apprehend from the symptoms either that inflammation of the lungs is present, or threatens to supervene, we are not to delay having recourse to bleeding. Leeches in general will suffice, and we may apply them either to the lower part of the neck, or to the chest, as symptoms may point out. Blisters are also of great use, not only in cases accompanied with pneumonia, but as external irritants, that tend to counteract the spasm. But where there is no plethora, or inflammatory action present, we are then to direct our attention to subdue and remove the proximate cause of the disease itself—in other words, the spasmodic affection of respiratory organs. One of the most powerful antispasmodics in hooping cough is an emetic; and we find that Nature herself spontaneously has recourse to vomiting as an immediate means of putting a stop to the paroxysm. Either tartar emetic, or ipecacuanha, combined with the acetas scillæ, may be administered for this purpose, for all three, besides being emetics, are expectorants. In obstinate cases, belladonna is of great use. Its action is chiefly confined to the muscular system, or *motor* nerves, and it exerts a powerful influence in controlling their irregular movements. This medicine is best given in the form of tincture, and we

have found both Mr. Blacket's Saturated, and Rauque's Ethereal, Tincture, equally manageable. (32, 33.)

There is a circumstance which would lead to the supposition that the spinal marrow is more intimately connected with hooping cough than we are quite able to explain; and that is, that external applications are more beneficial in this disease when used to the dorsal portion of the spine, than to any part of the chest.* Blisters exemplify this fact, as well as embrocations and counter-irritants. Garlic vinegar is a popular embrocation, and not a bad one: tartar emetic ointment is employed in hooping cough as a counter-irritant, but, in our opinion, a mustard poultice is preferable, because it can be

(32) Mr. Blacket's Formula.

℞ Extr. Belladonnæ, ʒx.
Spt. Vini rect. ℥j. Macera.

Half a drop night and morning is sufficient for a dose, which may be given in Gum Tragacanth and water.

(33) M. Rauque's (of Orleans) Ethereal Tincture.

Infunde pulv. foliorum Atropæ Belladonnæ ʒii. in Ætheris Sulph. ʒvj. per dies tres, deinde cola.

Sit dosis ♏vi.—xii. bis terve die.

* There are certain anomalous neuralgic affections sometimes met with, both of the abdomen and side, in which the same fact holds good; and the remarkable circumstance in these cases is, that if the finger be passed firmly and steadily down the spine so as to make pressure on each separate bone, you will almost to a certainty be able to detect a point of great tenderness in some one of the vertebræ, which, if forcibly

so often repeated without producing either pustulation or vesication, at the same time that it is speedily and powerfully rubefacient. Andral's embrocation for asthma, is also exceedingly useful as a pustulant in this disease. (34.)

Opium given internally always produces a pernicious effect in hooping cough, by checking expectoration without quieting the cough; but the same objections do not apply to morphia used endermically, and half a grain of the acetate, rubbed up with starch, may be sprinkled on a blistered surface over the precordia often with great advantage in the chronic stage of this disease.

pressed upon, will aggravate the intercostal or abdominal neuralgia.

This interesting pathological fact I have been able to detect in a considerable number of instances, and not the least important circumstance connected with it is, that the greatest benefit has been obtained in these cases from blistering the vicinity of the affected vertebra, and little or none from any means applied to the principal seat of pain complained of.

Very lately I traced the same affection existing in one of the upper dorsal vertebræ, in the case of a lady suffering under, and subject to, spasmodic asthma.

Now, we all know the relation which exists between the diaphragmatic and other nerves distributed to the respiratory muscles and the spinal marrow. It therefore remains to be determined what are the diseases that are dependent on this direct relation, and whether some of them may not have their original seat in the *medulla spinalis?*

(34) ℞ Olei Tiglii, ♏xx.
Olei Amygd. ℥i. M.

Change of air, in obstinate cases, is another means resorted to, and at times with much benefit; while at others it is tried without the least amendment. Nevertheless, it must be acknowledged, that in no class of diseases is the influence of local climate more strongly evinced than in the spasmodic affections of the lungs; at the same time it must be admitted, that there is nothing apparently more capricious than this very influence, since the air that in some is so apt to produce disordered respiration, is to others the very air that affords relief and exemption. This holds good with asthma in particular; since there are many, for example, who are always subject to attacks of the spasmodic form of this disease, while they reside in London, who get rid of it almost the instant they quit it.

CHAPTER X.

OF LARYNGITIS CATARRHALIS, OR A HOARSENESS; LARYNGITIS INTERSTITIALIS, OR PHLEGMONOUS LARYNGITIS; AND LARYNGITIS PSEUDO-MEMBRANACEA, OR CROUP.

The larynx, or organ of voice, is subject to three inflammatory affections not less different in nature than character. The first consists in a simple inflammation of its mucous lining, affecting persons after, as well as before, the age of puberty; the second is likewise an inflammation, but appears to have its seat beneath the mucous membrane, involving, in fact, the interstitial cellular membrane that connects the muscular fasciculi of the larynx together, and confines its attacks to adults; while the third is an inflammation of the larynx of a specific nature, wherein, judging by its morbid results, it would seem the proper mucous apparatus of the organ is not concerned, or if it be, the effect of the diseased action is to change, completely, the ordinary character of its secretion.

The first of these affections is denominated Catarrhal Laryngitis; the second may be called

Phlegmonous, or Interstitial Laryngitis; and the last is Croup.

When simple inflammation attacks the mucous membrane of the larynx, we have what is familiarly called "Hoarseness" produced, which runs the usual course of the mucous affections; that is, the natural secretion is first of all checked, then it becomes abundant, thin, and acrid, and, finally, thick and viscid. From the contiguity of the membrane to the muscular fasciculi of the larynx, its tumefaction impedes their movements, as well as narrows the air-passage; and, hence proceeds the alteration of the voice in this disease, varying between the grave and husky tone which we call hoarseness, and a scarcely audible whisper.

When the inflammation is seated lower down, affecting the mucous follicles of the *trachea*, or windpipe, the disease is called *Tracheitis*, and is denoted by a sense of painful uneasiness and huskiness in the part. Cough attends both these affections, and is entirely a sympathetic symptom, excited by the *consensus* existing between the entrance of the air-passages and the expiratory muscles. The great sensibility of the upper portion of the air-tube is to be regarded as a sentinel stationed by nature, to guard its aperture against the approach of any thing noxious to the lungs; and though, in this instance, instinct be mistaken in the nature of the offending cause, we cannot the less admire the repulsive manifestation of the

power instigating the cough—in reality, it is the irritation of the inflammation that sympathetically excites it.

Catarrhal laryngitis is usually attended with some febrile symptoms; which cease after a day or two. The treatment of it is as simple as its nature—a cathartic, some demulcent mixture (35), and a liniment and piece of flannel to the throat, are all that are necessary for its removal.

But it is often very different with the second variety of laryngitis we come to notice; that which affects the interstitial cellular membrane. It is a disease requiring the most prompt and energetic treatment; not from the intensity or extent of the inflammation, for that were a trifle, were it seated in a part of no vital importance; but when we recollect how small a degree of tumefaction is sufficient to close up the entrance of the glottis, we cannot wonder at the facility and suddenness with which suffocation ensues. Hence the extreme symptoms of this disease are frightful;

(35) ℞ Mucil. Acaciæ, ℥iii.
Syrupi Limonis, ℥i.
Tinct. Tolu, ʒss.
Aquæ font. ℥ii. M.
Capiat cochl. ampla duo tertiâ quâque horâ.

A pleasant demulcent drink may be made of a decoction of liquorice root; to which, some currant jelly or lemon syrup may be added.

the patient gasps for breath, the countenance expresses the utmost anxiety, the lips are blue, and the face swollen.

From the slightly alarming symptoms with which this often fatal disease commences, it frequently attains a dangerous degree of intensity before its real nature is apprehended. The redness of the fauces is trifling, and bears no proportion to the obstruction to breathing felt at the upper part of the glottis. This is a circumstance that ought to excite our suspicion; and as soon as we discover the nature of the disease, we are forthwith to adopt the strongest antiphlogistic measures, especially large and repeated bleedings, both general and topical. The system is also to be put under the immediate influence of calomel and opium; giving two grains of the former, and a quarter of a grain of the latter, every two hours; and, should there be the least danger of suffocation, tracheotomy should be performed. Indeed, this operation, so exceedingly simple in itself, is usually too long delayed; for as the whole danger lies in the risk of sudden suffocation, no sooner is an entrance to the air made below the seat of the disease, than the danger ceases, and we can pursue our mode of treatment, not only with greater security, but with more success. Dr. Graves recommends the touching of the inflamed fauces with a solution of the nitrate of silver, in the proportion of ten grains to an ounce of water; and I do not know a means

that allays irritable inflammation more powerfully, or which more effectually prevents its spreading.

The third variety of laryngitis is, perhaps, still more important, because more prevalent, than the last—we mean, croup; a disease which ordinarily is met with affecting persons under the age of puberty.

Croup, until lately, was considered by medical writers as a specific inflammatory disease, solely affecting the larynx; and, hence, Cullen calls it "Cynanche Laryngea;" but the more accurate investigations of some of the modern French pathologists, and particularly those of Bretonneau, have shewn that its sphere of action is much more extensive.

When the disease is confined almost entirely to the larynx, the French writers have designated it by the name of Pseudo-membranous Laryngitis, or *Croup,* strictly so called, if the stridulous noise, made in coughing and speaking, is to be deemed its peculiar characteristic. But as the formation of false membranes in the air-passages is the more correct pathological distinction of the disease;* and as these not unfrequently form in the trachea and its branches, the bronchi, without including the larynx, the absence of the ringing noise does

* So strong is the tendeney, in this disease, to form false membranes, that they are sometimes found on the mucous lining of the nostrils, gullet, stomach, and intestines.

not vary the nature of the inflammation affecting these parts, however well it may denote its particular seat when present. We, hence, perceive why *croup*, as a generic term, is apt to mislead us; for while the disease, in some instances, shall affect either the larynx alone, or the larynx, trachea, and bronchi, all at the same time, and thus preserve the peculiar *croupy* noise, from which it takes its familiar name, it will, in other instances, as we have already remarked, leave the larynx untouched, and alone affect the trachea and bronchi; in which case the croupy noise is consequently wanting. Hence, we have not only laryngeal, but tracheal and bronchial, croup, the two latter always going together.

Taking the pathognomonic character, therefore, of this specific inflammation from the false membranes that are formed in its varieties, let us now proceed to trace the symptoms of the disease, remembering that in the subsequent description, saving the shrill ringing sound of the cough and voice, which solely appertains to the larynx, all the other symptoms equally apply to tracheal, and bronchial, as to laryngeal croup.

The disease, though commencing with symptoms of no peculiar import, usually runs a rapid course; the child appears fretful and unwell for a day or two; the eyes become suffused and dull, and there is withal a cough which, usually from the first, has a peculiar, shrill sound. To these symptoms

a sense of tightness about the larynx is speedily superadded, accompanied generally with some degree of pain and tenderness felt especially on pressure, and the breathing becomes difficult and wheezing: sometimes, this last symptom is experienced for a day or two before any of the others.

One peculiarity of this inflammation of the air-passages is, that there is little or no mucus secreted during its course, or if it occasionally take place, it is to no extent; hence the rattling noise heard in simple catarrhal inflammation of the air-tubes does not occur in croup, or, at most, very slightly.

As the disease advances, the difficulty of breathing greatly increases, when, independent of the ordinary muscles of respiration, the extraordinary are called into play; those respiratory muscles, indeed, which never do act but under circumstances of great difficulty of breathing, and by a strong voluntary effort; such as the sterno-cleido-mastoidei, the scaleni, and serrati. The concluding symptoms of croup are often frightful to witness, from the violent exertions made to carry on respiration. The pulse becomes small, frequent, irregular, and, finally, intermittent. Towards its close, there is scarcely any cough, but what little there is, still preserves its characteristic sound; the voice is entirely lost, while the wheezing during the inspirations becomes stronger and more laborious. The more the symptoms increase in

violence, the greater is the sinking of the strength, from which the patient rallies only on account of the agony he suffers from the sense of impending suffocation. He is then seen making every effort to breathe, bending his head back, and putting his hand to the front of his neck, as if he would tear something away that is stifling him. In this last extremity, every muscle subservient to respiration is called into action and appears in a state of convulsive contraction, not excepting those even of the neck.

In consequence of the violent efforts to breathe, the whole body becomes covered with perspiration. From the stagnation of the blood in the lungs, the face is at first tumid and red, but as this continues and increases, the colour changes to a purple hue; the pulse which in the beginning laboured, now sinks rapidly; at length, Nature, unable to sustain the conflict longer, yields, and the patient expires in a state of inexpressible suffering.

The voice, as has been said, has a shrill ringing sound, resembling that from a brazen tube, or the crowing of a cock, and the attendant cough partakes of the same peculiar character. If any thing is expectorated, it is not muculent, but of a purulent character—a circumstance, by the way, which is always to be regarded as a bad symptom. With the purulent matter, pieces of the false membrane are not unfrequently mixed, and when this takes place to any extent, it is usually followed by considerable

relief. If no relapse ensues, the patient, after having expectorated the whole of the membranous formations, not unfrequently recovers.

There are circumstances which make it not improbable that these formations are sometimes removed by absorption; and the celebrated German anatomist and physiologist, Söemmering, has a preparation in his museum, which demonstrates that this disease is sometimes cured by the false membrane forming an organised adhesion to the proper mucous lining of the air-tubes.

Croup, when severe, usually terminates fatally about the third or fourth day, but death has been known to ensue within twenty-four hours from the attack.

When the disease terminates favourably, recovery is seldom completed before the end of a fortnight, or more.

From the commencement to the termination of this very frequently fatal disease, there is no preternatural redness observable in the fauces; neither does any difficulty of deglutition accompany it. In its greatest severity, or in its worst stage, there is never any delirium present.

Our prognosis in croup requires always to be guarded, first, from the difficulty and uncertainty of controlling the symptoms, and, secondly, from the disease being apt to turn out severe, although the character it first assumed may have been slight.

Several indications have been regarded as

critical, such as the breaking out of a general and profuse perspiration, an eruption on the skin, or a sediment in the urine; but none of them are to be depended upon, and even when they are followed by relief, it will be found that these incidents have been preceded by some changes more certainly indicative of amendment; such as by the pulse becoming fuller and more steady, by the breathing being freer and less hurried, and by the cough and the peculiar sound made by it, being in the one instance less severe and frequent, and in the other, by the stridulous noise becoming less perceptible. It is these alone which are to be regarded as favourable prognostics; and if a critical sweat, or looseness, or deposition in the urine accompany these changes, this is confirmatory of the favourable opinion we are now authorised to form from the amendment of the symptoms. The expectoration of the membranes is also to be regarded as a desirable event, although in a prognostic point of view, it cannot so much be relied upon.

With respect to the anatomical characters of croup, the first, most obvious, and most constant alteration in the healthy anatomy of the parts, is the albuminous exudation which forms the false membranes lining the air-passages.

When the extent of this is confined to the orifice of the glottis and its vicinity, the little white laminæ of which it consists are usually very adherent, and are covered with the epithelium,

similar to what is sometimes observable in certain varieties of faucitis; and this is more especially the case when the patient has been quickly carried off by the disease: but if death has not ensued until several days after its invasion, the epithelium, or internal scarf skin, is often, indeed I may say, always, destroyed, and then the false membrane is laid bare.

In the interior of the larynx these albuminous exudations are likewise very adherent; but they lie above or over the epithelium; and between the two, a frothy and puriform mucus is often found.

Sometimes the inner surface of the larynx alone is encrusted with this membranous production; oftentimes it is prolonged into the trachea, where it either forms a complete tube, or a simple plate of it is applied to the anterior or posterior face of this organ; and, at other times again, these prolongations extend so far as to reach the very extremities of the smallest air-tubes.

This false formation is loose in the trachea, floating, as it were, between two layers of puriform matter, while in the bronchi it is adherent.

But, independent of the membranous concretion, the trachea and bronchi are often filled with a light green, almost purulent, mucus; which is found sometimes between the false membrane and the parietes of the air-passages; at other times, in the middle of the membranous tube only.

The characters which the mucous membrane

presents below the false membrane, are not less interesting or important. The epiglottis and the borders of the glottis are usually red and swollen; while the larynx and a part of the trachea are seen speckled with reddish spots, distributed, for the most part, in longitudinal lines.

But these latter appearances are not invariably met with; for in very young children, who have died of croup, there is sometimes no redness to be perceived, either in the larynx or trachea.

With respect to the causes of this disease, it has been observed that it prevails chiefly in cold and moist climates, and is more usually met with by the sea-side, in the vicinity of lakes and the banks of rivers, and in damp valleys, more than in open dry plains, or on elevated situations. It is not a disease of any particular season of the year, unless when conjoined with malignant sore throat; and then it most frequently occurs in the middle of summer, when catarrhal affections are rare.

Croup, properly so called, although more particularly a disease of infancy, sometimes affects adults: the illustrious Washington is said to have died of this disease. In children, its most common period of attack is between the eighth and tenth year.

Before proceeding to point out the means of treatment in this disease, it is necessary to caution the young practitioner against adopting the notion that every inflammatory affection of the larynx

and trachea, attended with a croupy cough, is to be accounted a form of croup. Although the disease has obtained its name from this symptom, it only furnishes another example of the inaccuracy and impropriety of naming a disease from any one symptom in particular. It is, as we have more than once repeated, the pathognomonic character of this disease to form false membranes; and, hence, its most appropriate denomination is that given to it by the French pathologists—*Pseudo-membranous Laryngitis.*

A distinctive appellation of this kind becomes the more necessary, from the *croupy* noise occurring in other affections of the air-passages of children that are purely catarrhal, in which no false membranes are ever formed. To be aware of this circumstance is not merely of use nominally; it is of practical importance; and, with common care, we shall be enabled, for the most part, to distinguish between the real disease and its resemblance, by attending to the following circumstances, pointed out by Bretonneau:—

Firstly, this false form of croup usually comes on towards evening or during the night by a dry, noisy, hoarse, and wheezing cough; the child appears almost suffocated, as if it had swallowed some foreign body which had lodged in the windpipe; in fact, the disease commences with symptoms similar to those with which croup ends, and it is only towards the decline of it that the croupy

noise is made in coughing. The above symptoms continue for a few hours and then cease; the child does not cough during the day, but assumes its ordinary vivacity: but as evening comes on, the cough and other symptoms return, but in a less aggravated form. Another distinguishing character of false croup is to be drawn from the age of the patient. We have already observed, that the most usual age for croup to appear was from eight to ten, but its false resemblance is most commonly seen affecting children much younger, that is, infants of a year old up to five or six; another of its peculiarities is, that it is more frequently observed to go through a whole family, affecting all of them successively, than croup, and some children are so organised as to have this false form of the disease two, or even three, times, a circumstance never observable in true croup: it runs its course also more speedily, and, as may have been perceived from the description we have here given of its course and character, it is much less dangerous in its nature than true croup.

Of the Treatment of Croup.

In the treatment of this disease there are three principal indications to be attended to:—in the first, we have for our object the diminution of the inflammation, and the prevention, if possible, of the formation of the false membrane; in the

second endeavour, to facilitate the detachment and the solution of the pseudo-membranous exudation; and in the third, to provoke the expectoration or expulsion of the detached laminæ, or of the mucosities, the product of their dissolution.

To fulfil the first indication completely is almost always out of our power: we speak in reference to the prevention of the false membranes; for it is a fact, now very fully ascertained, that these are not only formed with great rapidity, but also that they are among the very first pathological effects of the diseased action. However, though this endeavour on our part be so very difficult, and nearly next to impossible, to accomplish, this circumstance is not to make us dilatory in adopting vigorous antiphlogistic means to subdue, or, at least, control, the inflammation, since, in attaining either point, we not merely lessen the danger proceeding from it, but check, if we cannot altogether stop, the formation of the adscititious membranes. We, therefore, resort to bleeding, both general and topical; we exhibit emetics; and we employ derivatives in the form of blisters, sinapisms, and the warm bath. By such means we diminish the afflux of blood to the parts affected, and thus, as a consequence, lessen the spasm which results from it. Of the two modes of abstracting blood, the general is to be preferred, for, independent of its more powerful influence in overcoming the inflammation, the pain occasioned by leeches, and the fright produced at the mere sight

of them, often cause children to cry violently, and, by thus straining the larynx, counteracts any good effects that might ensue.

Bleeding *ad deliquium* has been strongly recommended by Dr. Chapman, an eminent physician in Pennsylvania, in the early stage of croup. Dr. Chapman says, "When pushed to this extent, I may almost say that venesection is invariably successful: as yet I have never known one instance in which it failed. The moment that syncope takes place, the hoarseness, cough, impeded respiration, and fever disappear."* It is obvious, also, that general bleeding is still more advisable when the disease is complicated with inflammation of the air-tubes, or of the lungs.

Emetics are exceedingly beneficial in croup. Even if they do not accelerate the resolution of the inflammation, they seldom fail of relieving, at least for a time, the spasm which affects the muscles of the larynx, and the sense of suffocation occasioned by it. In the selection of them, we are to choose those that act promptly: the tartarised antimony is, perhaps, of most benefit at the commencement of the disease; some give a preference to the sulphate of zinc or copper, and either is certainly a very advisable emetic in all those cases where we are anxious to preserve and sustain the patient's

* "Thoughts on the Pathology and Treatment of Cynanche Traehealis, or Croup."

strength as much as possible by not inducing any great degree of nausea—an effect which always has the effect of diminishing the vital powers, and ought, therefore, to be avoided at an advanced period of the disease.

Derivatives, not of an irritating nature, should be used at the same time with the above means, such as pediluvium, emollient cataplasms and fomentations to the lower extremities, especially where there is any considerable spasmodic irritability about the larynx.

Having subdued, by the above means, the activity of the first, or inflammatory stage of the disease, we are now to direct our attention to accomplish the second indication pointed out, namely, the detachment or dissolution of the fibrinous exudations that coat the inner surface of the air-passages.

The manner in which we endeavour to effect this object is by promoting the natural secretion of the mucous from the laryngeal and tracheal follicles, by which the adhesions of the false membranes become dissolved and detached. Among the medicines found most effectual in fulfilling this intention are the mercurial, and, in particular, calomel. From half to a whole grain may be given every hour often with powerful efficacy, and without any risk of exciting salivation; for it is a fact of which all medical men are aware, that both infants and children can take calomel, to the extent of a drachm a-day even, without being salivated. To

the exhibition of calomel internally may be conjoined mercurial inunction on the lateral parts of the neck, taking care that there be no inflammation of the sub-maxillary glands, for then there would be danger of their suppurating.

There is an intimate sympathy among the whole of the mucous tissues. This fact we have already taken many opportunities, in the preceding pages, to exemplify; and its importance and practical utility must not be overlooked nor disregarded in the present instance. We are, therefore, called upon to attend to the state of the bowels; so that, by exciting their action, and that of their mucous follicles, we may not only remove a source of irritation by their due evacuation, but likewise, through sympathy, institute a similar action in the follicles of the larynx and trachea.

There are various other remedies that may be judiciously resorted to as auxiliaries; such as the oxymel of squill, the ammoniacal mixture, ipecacuanha wine, and the tartar emetic, in minute doses, all of which often second the operation of calomel in promoting the secretion and dilution of the mucus, and hence the detachment of the coagulable lymph.

In treating croup in which much spasm prevails, we must direct our attention to this character of the disease, and call to our aid the powers of camphor, assafœtida, and the ethers, to control the vehemence of the spasmodic paroxysms; and

in this enumeration we must not neglect to include the quieting powers of the warm bath, an antispasmodic always so safe, and frequently so efficacious.

In noticing the antispasmodics, it will be observed that we have not included opium; and the reason is, that its employment is almost invariably pernicious in every form and stage of croup. Its action is to check that which we so earnestly desire to effect—the separation of the false formations by the secretion of mucus beneath them. Opium likewise is apt to increase the difficulty of breathing, and, by inducing stupor, to diminish the power and effort of the lungs to eject the detached portions of membrane.

The inhalation of medicines through the medium of the steam of hot water, is another of the means that have been recommended to forward the separation of the membranous concretions; and it is certainly a very advisable measure where the patient is old enough to make use of it. Ether and vinegar are those mostly resorted to, and when the patient is too young to practise inhalation, fumigation of the apartment with the same evaporable liquids has been employed as a substitute.

The third and last indication remaining to be noticed is, the means of accomplishing the expulsion of the false membranes, when, after their detachment, they have not been dissolved into

mucosity and expectorated, nor yet removed by the absorbents.

It is in this stage of the disease that we again obtain advantage from the use of emetics, provided the strength of the patient be not too far enfeebled, nor any inflammation of the stomach present to prevent our employing them.

The repeated succussions produced by the action of vomiting, have not unfrequently been the happy means of bringing about the expulsion of the membranes choking up the air-passages; particularly when, through the treatment pointed out above, they have become detached, and float loose in the larynx and trachea. Should the state of circumstances prohibit the employment of emetics, or should they fail in producing vomiting, we are then justified, in extreme cases, in inducing this effect by irritating the fauces with a feather; some writers, especially among the French, have great confidence in this means, and relate instances of its having been practised with the happiest results.*

The inhalation of vinegar may be again resorted to in this stage; and there is yet another means

* From the difficulty of provoking vomiting in croup, it would appear that there exists a kind of morbid counter-irritation to the operation of an emetic; and it would be an interesting point to determine through what particular nervous influence this takes place.

which is recommendable for its safety, and not less so for its ingenuity—and that is, the use of sternutatories, blown up the nostrils of children by means of a quill, or glass tube. This is entirely a French practice, and to them is undoubtedly due the merit of suggesting and employing it. Sneezing is entirely an act of the respiratory muscles—a sudden and powerful spasmodic expiration, in fact; and, acting as it does directly through the whole length of the air-passages, the act of sneezing has frequently effectuated the expulsion of the loose detached membranes within them.

We have but one word more to say on the treatment of croup, and that is with respect to tracheotomy. No means of relief, at first sight, seems more feasible than that of establishing an artificial aperture to carry on respiration, when the natural one becomes blocked up by false formations; and, could this be effected below the seat of obstruction, our most sanguine expectations of saving the patient's life might, in numerous instances, be realised. But, since *post mortem* examinations, no less than the result of the experiment, have proved how futile our *à priori* reasonings on the subject are, this mode of treatment is now rarely had recourse to. The operation has undergone various ingenious modifications, but with no more fortunate issue. The false membranes almost invariably extend much below the larynx; and hence any opening made into this part, or even into the windpipe itself, only

mitigates the urgency of the symptoms for a moment. Medical men, therefore, have almost entirely abandoned tracheotomy in croup, and that for the best of reasons—its insufficiency and uselessness; since, in most cases in which it might seem to be required, it cannot reach the evil it is meant to remove.

THE END.

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